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# ANNUAL REPORT

OF THE

# GOVERNOR OF THE PANAMA CANAL

FOR THE

FISCAL YEAR ENDED JUNE 30 1920



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WASHINGTON
GOVERNMENT PRINTING OFFICE
1920

# UNIVERSITY OF FLORIDA L I B R A R Y



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# ANNUAL REPORT

OF THE

# GOVERNOR OF THE PANAMA CANAL.

THE PANAMA CANAL, OFFICE OF THE GOVERNOR, Balboa Heights, Canal Zone, September 23, 1920.

Sir: I have the honor to submit the annual report covering the construction, operation, maintenance, and sanitation of The Panama

Canal for the fiscal year ended June 30, 1920.

The Canal was informally opened to traffic in August, 1914. On July 12, 1920, the President issued the following proclamation formally announcing the completion of the Canal and declaring it open to commerce:

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA.

### A Proclamation.

Whereas section 4 of the act of Congress entitled "An act to provide for the opening, maintenance, protection, and operation of The Panama Canal, and the sanitation and government of the Canal Zone," approved August 24, 1912 (37 Stat. L., 561), and known as the Panama Canal act, provides that upon the completion of The Panama Canal the President shall cause it to be officially and formally opened for use and operation; and

Whereas the canal is completed and is open for commerce:

Whereas the canal is completed and is open for commerce:
Now, therefore, I, Woodrow Wilson, President of the United States of America, acting under the authority of the Panama Canal act, do hereby declare and proclaim the official and formal opening of The Panama Canal for use and operation in conformity with the laws of the United States.

In witness whereof I have hereunto set my hand and caused the seal of the United

States to be affixed.

Done in the District of Columbia this 12th day of July, in the year of our Lord one thousand nine hundred and twenty, and of the independence of the United States of America the one hundred and forty-fifth. Woodrow Wilson.

SEAL. By the President:

NORMAN H. DAVIS, Acting Secretary of State.

This formality was necessary in order to comply with the require-

ments of the Panama Canal act.

During the six years of operation there has been a marked increase in traffic through the Canal notwithstanding the fact that the World War has everywhere prevented the normal development of oceangoing commerce. After the entry of the United States into the war there was a decrease in commercial traffic, due to the diversion of certain lines of ships to trans-Atlantic service, which was more than offset by the increase in traffic growing out of the war, chiefly on account of the development of the nitrate trade with the Pacific coast of South America.

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The number of commercial transits, the amount received from tolls and other collections, and the current expenses of maintenance and operation for the several fiscal years are shown in the following table:

Fiscal year.	Number of com- mercial transits.	Tolls and other revenues.	Current expenses of operation and maintenance.
1915.	1,072	\$4,343,383.69	\$4,123,128.09
1916.	760	2,558,542.38	6,909,750.15
1917.	1,806	5,808,398.70	6,788,047.60
1918.	2,068	6,411,843.28	5,920,342.94
1919.	2,028	6,354,016.98	6,112,194.77
1920.	2,478	8,935,871.57	6,548,272.43

For the same period the number of Canal transits by Government vessels exempted from tolls and the total tonnage of cargo carried were as follows for each fiscal year:

Fiscal year.  Number of vessels.  Cargo. Fiscal year.		Number of vessels.	Cargo.		
1915. 1916. 1917.	16 43 100	Tons. 43, 647 76, 675 147, 105	1918. 1919 1920	112 179 267	Tons. 36,715- 93,641 351,332

Included in the above are 172 merchant ships carrying cargo for the Government.

The revenue of the Canal exceeded the current expense for its operation and maintenance by \$2,387,599.14 for the fiscal year 1920, and the total current expense of operation and maintenance for the six-year period since 1914 exceeded the total revenues by the amount of \$2,231,091.61. This excess will be more than overcome by the revenues of 1921. The year in which the expenses exceeded the revenues in the greatest amount was 1916, during which traffic was suspended for six months on account of the great slides at Culebra, and the expenses were increased by the cost of

removing them.

The Canal in its present state represents a capital expenditure by the United States of \$366,650,000, exclusive of expenditures for its military and naval defense. The investment, from one point of view, may be regarded as having been made and justified in the creation of an invaluable element of national defense. If this be true, the Canal has an additional value in rendering useful service in time of peace, and in returning to the Federal Treasury revenue more than sufficient to defray the expense of its operation and maintenance. It is capable of doing more than this; and it is not an idle prediction to state that with proper management directed along the lines of a large business enterprise, it will within a reasonable period of normal world conditions carn an actual profit on the cost. From an analysis made under reasonable assumptions as to amortization, depreciation, obsolescence, and interest, it is estimated that with an annual revenue of three times that of 1920 the Canal will make a financial return on the investment. The time required to produce this result will be affected by any changes in legislation affecting charges for tolls. In the meantime the Canal is performing

an important commercial service in a promising field by stimulating trade with the Orient and with the west coast of South America. Over 25 per cent of the eargo handled through the Canal since its opening to the end of the fiscal year 1920 was in transit between the United States and South America, and 14½ per cent was between the Atlantic coast of the United States and the Orient. Among nations the chief users of the Canal are the United States and Great Britain. The number of vessels passed each year for these nations and for all other nations was as follows:

Fiscal year.	United States.	Great Britain.	All other nations.	Fiscal year.	United States.	Great Britain.	All other nations.
1915 1916 1917	238	465 353 780	153 191 632	1918	628 786 1, 129	699 602 753	803 637 596

By authority of the Panama Canal act, stores of coal, fuel oil, ship chandlery, groceries, meats, and miscellaneous supplies are maintained by The Panama Canal and Panama Railroad to meet the requirements of ships that use the Canal, and facilities for repairs to ships are provided at the two terminals, including the dry dock at Balboa, capable of receiving any ship that can pass through the locks. These auxiliaries have been largely utilized and are of great value in carrying out the policy of making the Canal attractive in all of the incidental services that are considered by shipping interests in routing their vessels. It has not been the purpose to make large profits on these activities, but rather to regulate the charges so as safely to cover the cost. The receipts from these miscellaneous services to shipping during the year were as follows:

Coal	
Water	55, 412, 64
Oil, groceries, and miscellaneous supplies	1, 274, 556, 18
Mechanical repairs to ships	3, 863, 933. 00

With the growing traffic, it will be necessary to expand these auxiliary facilities in the near future. The old dry dock and shops at Cristobal, inherited from the French, and utilized during construction days for repairs to Canal equipment, are notably inadequate to meet the present requirements of commercial steamers. These developments will require appropriations in addition to the amount of current expenditures, but the earnings of the Canal will be correspondingly increased and the amount expended will be returned from the revenues derived. If the developments are permitted to lag behind the increasing traffic, the Canal will not be in position to handle all of the business offered.

The problems confronting the head of the local administration of Canal affairs are those arising from (1) the maintenance of the Canal, the Panama Railroad and other auxiliaries, involving the practice of civil engineering in all its branches, including sanitation: (2) the operation of the Canal, requiring technical knowledge of all of the engineering features of the Canal and of its navigation, and of the conduct of a great business enterprise of unusually varied ramifications; and (3) the government of the Canal Zone, involving the administration of civil laws affecting persons living within the limits of the

Canal Zone or entering upon it. The responsibility of the Governor in all of these matters is complete; his authority is also complete, as determined by the organic act and by the Executive orders of the President issued thereunder. The duties, responsibilities, and authorities of the Governor are civil in character and have no relation to the preparation for the defense of the Canal in time of war. He continues his functions during war, except that within the discretion of the President, under authority of the organic act, the commanding officer of the military forces on the Canal Zone may be given entire control during a state of war, in which case the Governor performs his duties under the direction of the military commander. In every branch of his work the Governor has the responsibility of maintaining an efficient force of employees and of settling locally, so far as possible, all issues raised by them concerning compensation, conditions of employment, and other matters. A liberal, but, in my judgment, a reasonable policy, has been followed in adjusting these issues. The organic act of the Canal fixes a maximum limit of pay for its employees for services similar to those of Government employees in continental United States. Many employees perform duties for which there is no parallel in other Government service, and their compensation is deduced from prevailing commercial rates in the United States for similar work. In general, the allowable increase of 25 per cent above United States rates is applied to American employees, adjustments being made in some cases for purposes of coordination among positions of equivalent responsibility in our organization. The Canal schedules of pay have therefore followed the increases that have occurred in the United States. In the case of the alien labor force, composed almost altogether of West Indians, increases in wages have kept pace with increases in living costs, as compared with the standards of 1914. A permanent board of heads of departments and divisions is convened every three months to make thorough investigation of changes in cost of living to these employees and to recommend appropriate changes in wages to meet them. There has been a large surplus on the Isthmus of this class of help, but during the year 1920 some emigration has occurred to Cuba and the United States.

General industrial conditions on the Canal are good. There has been some unrest, but less than elsewhere. Care has been taken to avoid arbitrary and unreasonable action in adjusting elements of discontent, with results that have been generally satisfactory. Representation has been allowed to employees on boards appointed for making recommendations concerning rates of pay and working conditions. It has been my experience that among American employees decisions based upon a consideration of both sides of the questions at issue have been acceptable to them, and that, in general, they take an active interest in the Canal and its welfare and have a commendable feeling of pride in it.

The turnover in force of Americans during the year was 33 per cent. Some of it is attributable to resignations on account of opportunities for betterment elsewhere, but most of it to the fact that the American workman does not wish to make his permanent home in the Tropics, and while here feels out of touch with possibilities of business advancement at home. I do not advise taking away the privileges now enjoyed by our American employees, but believe that the local situa-

tion should be allowed to work itself out under conditions as at present established and along the lines of comparison with industrial conditions in the United States.

## ORGANIZATION.

The heads of departments and divisions remain as reported last

year, with the following exceptions:

By orders from the Navy Department, Capt. L. R. Sargent, United States Navy, marine superintendent, was relieved from duty with the Canal on April 15, and Capt. E. P. Jessop, United States Navy, was detailed for appointment to the position.

Mr. T. L. Clear, who resigned the position of collector on September 20, 1918, to accept a commission in the Inspector General's Department of the United States Army, returned to his former position with

the Canal on September 6, 1919.

Mr. J. H. McLean, paymaster, resigned on November 15, 1919, and Mr. R. W. Glaw, assistant paymaster, was promoted to fill the vacancy on January 24, 1920.

# DEPARTMENT OF OPERATION AND MAINTENANCE.

# Building Division.

This division remained in the charge of Mr. T. C. Morris, resident engineer, under the supervision of the engineer of maintenance. On account of lack of appropriation no large building projects were in progress for the Canal, and the chief operations of the building division comprised the construction of two Army posts, one at New Gatun and one at Miraflores, from Army appropriations which were allotted by the Secretary of War to the Governor for expenditure. The total amount appropriated for the projects was \$4,986,849, of which \$2,851,600 for buildings were allotted to the building division.

A general description of the buildings constructed was contained in the report of last year. Unavoidable delays were experienced in the progress of the work on account of delays in filling requisitions for material and for skilled mechanics. Under a requirement of the act appropriating the funds no material, supplies, or equipment could be purchased until it was determined whether or not they could be furnished from available surplus stores of the War Department. In filling our requisitions it was necessary for the general purchasing officer in Washington to communicate with the various surplus stores of the construction divisions of the Army and attempt to purchase all available material from these stores. In some instances certain materials were available when the inquiries were made but had been otherwise disposed of when about to be contracted for. In such instances it was necessary to purchase the needed material in the ordinary way from commercial firms. precedented delays occurred also on account of difficulties in transporting materials to the seaboard, congestion in the harbors in the United States, and delays to shipping on account of labor difficulties.

On June 30, 1920, the state of completion at Fort Clayton (Miraflores) was as follows: All buildings 100 per cent except headquarters, which was 85 per cent complete; one battalion barracks, 85 per cent

complete; one battalion barracks, 70 per cent complete; and at Fort Davis (New Gatun), all buildings were 100 per cent complete except one 2-family captain's set, 84 per cent complete; one 2-family set, 50 per cent; one 4-family lieutenant's set, 90 per cent; and one 4-family lieutenant's set, 80 per cent complete; headquarters building, 95 per cent complete; one battalion barracks 70 per cent, and one battalion barracks 60 per cent complete.

At the naval submarine base and air station, work was continued on projects for which allotments have been made by the Navy Department. Total expenditures during the year for the submarine

base were \$147,317, and for the naval air station \$91,919.

Work at the Army aviation base under an allotment from Army appropriations was continued; total expenditures during the year

being \$66,954.

At Fort Sherman new work authorized under an allotment from Army appropriations for barracks and quarters was completed at a total expenditure of \$125,715.10. A new wharf was completed at

a cost of \$25,501.08.

At the new silver townsite at Mount Hope work was begun on the construction of thirty-nine 12-family frame quarters and ten 32-room frame bachelor quarters. At the end of the year the project was 54 per cent complete. A commissary building authorized for this community was under construction and was 75 per cent complete

at the end of the year.

This division was placed in charge of the erection of a 100-foot lighthouse at the channel end of the east breakwater, Cristobal Harbor. Contract was awarded for the superstructure on October 8, 1919, at a price of \$6,500 delivered at Colon. The contractor's drawings were received on February 3, 1920, giving the dimensions of the base of the tower and sufficient data for computing the loads on the base. The foundation consists of 23 feet 7 inches square reinforced concrete deck design, supported by 12 steel pipe piles, 3 at each corner, driven to rock. After driving the piles were filled with concrete. The construction of the foundation was completed on June 22, and the erection of the superstructure will proceed upon

the arrival of its component parts on the Isthmus.

From funds made available by congressional appropriation, work was begun on the construction of a 60-ton daily capacity garbage incinerator for the Cristobal-Colon district. On July 1 the building was practically complete. The equipment was installed and the work remaining to be done consisted of placing fire brick lining in the combustion chambers and breechings. The building is of reinforced concrete construction, with tile roof, two stories high, and 37 feet 3 inches by 101 feet 3 inches in horizontal dimensions. On the first floor are two 30-ton incinerating units with their accessories. The second floor is of reinforced concrete, designed to support a live load of 200 pounds per square foot, and will be used for the receiving and distribution of garbage for incineration. The garbage will be delivered on motor trucks with removable steel bodies of  $2\frac{1}{2}$  yards capacity. An overhead electric crane will lift the bodies from the trucks and dump them directly into the incinerator hopper or in the proper place on the floor until the furnace conditions warrant charging. The estimated cost of the project is \$113,000.

A combined mechanical shop and storehouse was authorized for construction in the immediate vicinity of the Cristobal docks. In the shop will be handled the increasing amount of minor repairs to commercial ships and others lying at the docks, and the storehouse will be used for ships' stores where they will be readily accessible, as required, for sale to ships at the docks. The shops area is 76 by 113 feet, and the storeroom 76 by 125 feet; the end of the building designed for a storehouse will be two stories high. The estimated cost of the building is \$90,000 and on July 1, 1920, it was 52 per cent complete.

The old Panama Railroad stables in Colon, constructed in 1908, were demolished for sanitary reasons, and a new building was authorized in a section of Colon set apart for such purposes, at an estimated cost of \$142,000. Work proceeded on the construction of the new stables during the year and the buildings were 84 per cent complete at the end of the year.

The old Royal Mail pier at Colon was demolished by virtue of a sanitary regulation of November 11, 1913, which required the demolition of all nonrat-proof piers by January 1, 1919. The property was acquired by the Panama Railroad Company, and on the iron substructure, which remained intact, a new fireproof and rat-proof structure was built 60 by 400 feet for the accommodation of small coastwise and native craft. The reinforced concrete floor slab is designed for a live load of 175 pounds per square foot over the entire structure, covered with a roof built of material salvaged from the old Panama Railroad Pier No. 2. Water lines were installed for fire protection and for water supply to ships. The work was completed at a total cost of \$38,247.70.

Under work request from the supply department construction was begun of two reinforced concrete oil tanks, 55,000 barrels capacity each, one at Mount Hope and one at La Boca. The estimated cost of the tanks is \$55,000 each. On July 1, 1920, the Mount Hope tank was 98 per cent complete and the La Boca tank 60 per cent

complete.

In addition to the above, the building division performed various minor items of work for the Canal; and for individuals and companies the following work was performed: The construction of a community house for the National Catholic War Council, at Balboa, at an estimated cost of \$85,000, was in progress; an office building and quarters for the Royal Mail Steam Packet Company, at Cristobal, was under construction at an estimated cost of \$275,000; and bachelor quarters and an office building for the Central and South American Cables Company was completed.

The operations of the building division are described in further

detail in Appendix A.

# LOCKS OPERATION AND MAINTENANCE.

On July 25, 1919, the largest American ships that have transited the canal were passed through the locks; they were the dreadnaughts New Mexico and Mississippi, each of 32,000 tons displacement, 624 feet long and 97 feet 41 inches beam. As the locks are 110 feet wide, there was in each case a clearance of 6 feet 31 inches on either side, with the vessel centered in the locks. No difficulties were expe-

rienced during the passage.

The British cruiser *Renown*, which passed through the Canal on March, 30, 1920, is the largest ship to have transited the Canal to date, although her beam is 6 feet less than that of the *New Mexico* and *Mississippi*. She has a length of 795 feet and a displacement of 33,379 tons.

There was a total of 8,149 lockages during the year, of which 2,559 were at Gatun, 2,859 at Pedro Miguel, and 2,731 at Miraflores. A total of 2,534 commercial vessels were locked through at Gatun, 2,527 at Pedro Miguel, and 2,528 at Miraflores. Six hundred and fourteen vessels of all descriptions, pertaining to the Canal and Army and Navy, for which no tolls were paid, passed through Gatun locks; 1,003 through Pedro Miguel locks, and 978 through Miraflores locks.

For purposes of inspection and repair, locks were out of commission during the year as follows: At Miraflores, east chamber, from December 12, to January 31; west chamber, from February 2, to February 7; at Pedro Miguel, west chamber, from February 12 to March 27. During these periods the rising stem valves at Miraflores and Pedro Miguel locks were removed and completely overhauled. Considerable evidence of the action of the teredo was found in the submerged hardwood valve fittings and gate sills, requiring replacement of the parts affected. The wearing pads and roller trains of the rising stem valves were found to be worn sufficiently to require their replacement at their next period of overhauling. The maintenance of the protective coating of the submerged portion of the lock gates was continued. None of the chambers of the Gatun locks were unwatered during the year, and with the exception of the overhauling of the 12 intermediate valves and 24 roller trains nothing but the usual work was done.

The work of the operation and maintenance of the locks is described in detail in the report of the engineer of maintenance, Appendix A.

# ELECTRICAL DIVISION.

This division is charged with the maintenance and operation of the electric generating stations, substations, transmission lines, and power distributing systems; maintenance of the lighting systems of the Canal Zone; maintenance of telephones and telegraphs, fire alarm and railway signal systems, and railway interlocking plant, and installation and maintenance of all new electrical equipment required by the Canal, the railroad, the Army and Navy posts, and such commercial vessels as require electrical work while transiting the Canal. The division remains in the charge of Mr. Walter L. Hersh as electrical engineer.

The total expenditures of the division for the year were \$1,700,000, of which 46 per cent was for work and current for other departments of the Canal, 24 per cent for work and power for the railroad, 10 per cent for work performed for outside interests, 9 per cent for improvements in the power system, and 6 per cent for exterior electrical work at the new Army posts at Fort Clayton and Fort Davis; 1½ per cent for work for other departments of the Government, and the balance of 3½ per cent covers stock of materials, equipment purchased, and

work in progress awaiting completion and rendering of bills.

The major equipments of the power system remained unchanged during the year. Due to the failure of a 2,200-6,600-volt auto transformer of unit No. 2, Gatun hydroelectric station, a complete set of new coils for this transformer was ordered. Pending the delivery of the new coils No. 2 generator has been placed directly on the 2,200-volt service and is operating at about three-quarters capacity.

At the Cristobal substation two 2,200-volt feeder equipments were installed, one as a distribution feeder to the new silver townsite at Mount Hope and the other to relieve the existing feeders to the Cristobal docks to provide power for the new small machine repair

shop at the docks.

At Gatun substation a new 300 KVA 60,000-volt testing transformer was installed for applying high potential tests to the transmission line. A 30-ton motor-operated chain hoist was installed preparatory to the handling and installing of an 8,400 KVA 44,000-6,600-volt transformer on requisition for this substation.

The average combined generator output of the power system for the year was 5,382,750 KWH per month, as compared with 4,725,637 KWH per month last year. A monthly average of 4,608,341 KWH was transmitted and distributed to all power consumers, with a

monthly average of 3,955,607 KWH last year.

On account of the abnormal dry season, extending until the middle of May, it was found advisable to conserve the water supply stored in Gatun Lake by relieving the hydroelectric station of a load ranging from 3,000 to 4,000 KW. During this period this load was carried by the steam power plant at Miraflores, which generated 8,234,380 KWH. During the remaining nine months Miraflores plant was maintained on the usual basis of stand-by service.

There were from all causes 11 interruptions in the service of the transmission line, as compared with 49 last year. There was only 1 interruption chargeable to insulator failure, as compared with 32 last year. This improvement is attributed to the additional disk installed to all insulator strings of the transmission line, as mentioned in the

report of last year.

The average cost of electric power distributed for the year was 9.421 mills per KWH, and the average cost of distributed lighting current, including lamp renewals, was 13.277 mills per KWH. The corresponding figures for last year were 8.097 mills for power and 12.963

mills for lighting.

During the year 999 telephones were installed and 636 removed, leaving a total of 3,330 telephones in service on June 30, 1920, a net increase of 363 telephones in the year. The average number of telephone calls during the eight-hour business day was 28,900, as compared with 22,630 for last year. A total of 15,114 feet of lead-covered, paper-insulated telephone cable of all sizes was installed, resulting in a total installation of 642,448 feet of telephone cable in service on June 30, 1920.

There were no failures in alarm apparatus during the year, and 27 alarms were turned in. Two new fire-alarm boxes were installed en Pier No. 6, Cristobal. There were no material changes in the railway signal installation during the year. There were 2,262,937 registered arm movements, with 149 failures, as compared with 2,084,908 arm

movements and 97 failures during last year.

At the electrical repair shop 307 armatures, motors, and generators were rewound; 131 transformers and miscellaneous coils were renewed; 156 magnetos and fan motors were rewound or repaired; 62 electrical appliances were repaired; 148 switchboards and panels were manufactured, and 180 miscellaneous other repair jobs were done. The forces of the electrical division handled 361 jobs of marine electrical work on ships at Cristobal and 416 at Balboa. The more important items of this work included the complete rewiring, overhauling, or additions to the electrical installations aboard the steamships Cristobal, Acajutla, Ansaldo, San Giorgio, Salaverry, Paita, Circassian Prince, Azov, Ardmore, and the Peruvian cruiser Lima.

For further details of the work of the electrical division see report

of the electrical engineer, Appendix A.

# MUNICIPAL DIVISION.

The work of this division continued under the charge of Mr. D. E. Wright, as municipal engineer, under the supervision of the engineer of maintenance. The work performed included the operation and maintenance of water reservoirs, pumping stations, filtration plants, and the maintenance and repair of municipal improvements in the

Canal Zone and in the cities of Panama and Colon.

Miscellaneous municipal construction work for the Canal, the railroad, the Army and Navy, and for individuals and companies, included the following principal items: Necessary surveys for new townsite projects, including the layout and design for water, sewers, streets, and sidewalks; the maintenance of all roads, water-pumping stations, purification plants and pipe lines, and such municipal construction work as was required within the Canal Zone and cities of Panama and Colon. The principal items of new construction work included municipal engineering work for the new Army posts at Fort Clayton and Fort Davis; the development and placing in municipal order of the extension of the city of Colon, providing additional 99 building lots for residential purposes for individual residents of Colon and for Canal employees; the new town of Mount Hope for occupation by silver employees of the Panama Railroad at the docks and coaling stations; the construction of a concrete road with an asphalt wearing surface from the lumber shed in Balboa to Diablo Hill; the resurfacing and oiling of the Paraiso-Gamboa macadam road; street extensions for new buildings of the Army posts at Fort Sherman, with necessary water and sewer connections; the demolition of the Calidonia bridge over the Panama Railroad tracks in Panama and constructing a grade crossing to replace it; the repairing of roads in Fort Amador and Corozal; miscellaneous work for the United States Navy at Coco Solo, consisting of construction of sea wall, sanitary ditches, baseball park, concrete sidewalks, etc.; the development of block 54, Colon, as a warehouse site; construction of concrete road from the new cold-storage plant to the Margarita-Mount Hope Road; the extension of the concrete road to Pier No. 6; and a large amount of miscellaneous work for The Panama Canal, the Panama Railroad, and various business concerns of Panama and Colon. The amounts expended on this work are as follows: Army post, Fort Clayton, \$355,829.12; Army post, Fort Davis, \$329,786.05; silver townsite, Mount Hope, \$115,788.62; concrete road

Balboa to Diablo Hill, \$34,452.44; resurfacing Paraiso-Gamboa road, \$22,713.22; roads, streets, sidewalks, etc., Fort Sherman, \$9,881.25; Calidonia bridge crossing, \$36,594.87; miscellaneous municipal work for United States Army, \$39,659.61; miscellaneous municipal work for United States Navy, \$38,446.18; development of block 54 in Colon, \$38,537.43; road from cold-storage plant, Mount Hope, \$39,150.11; extension of road to Pier 6, \$12,779.63; miscellaneous municipal work for the Panama Canal departments and Panama Railroad, \$159,893.22; outsiders, \$20,232.43; municipal engineering work, New Cristobal, \$91,488.44; and municipal work between Seventh and Ninth and G and K Streets, Colon, \$115,685.67.

The supplying of water and the maintenance of sewer systems and streets in the cities of Panama and Colon was continued. The total expenditures in these two cities for routine maintenance work was \$184,453.92. Work was continued on enlargement of storm sewer

drains in the city of Panama, \$112,177.84 being spent.

The total number of gallons of water pumped at the various pumping stations was as follows: Gamboa, 3,895,630,000; Miraflores, 423,790,000; Balboa, 2,790,202,000; Paraiso, 74,640,000; Cucaracha, 176,513,000; Mount Hope, 2,157,686,000; Agua Clara, 427,714,000; Frijoles, 11,620,000; and Monte Lirio, 3,264,000. The divisional cost of water delivered in the several districts was as follows per 1,000 gallons: Ancon-Balboa, \$0.07; Miraflores, \$0.06; Pedro Miguel, \$0.07; Paraiso, \$0.07; Gamboa, \$0.08; Gatun, \$0.14; and Cristobal, \$0.07. These costs include filtration, analysis, and treatment. The sales of water to vessels were as follows: Cristobal, 2,215 vessels, 110,825,282 gallons; Balboa, 1,438 vessels, 35,289,250 gallons. The water consumption in the city of Panama for the year was 1,026,440,000 gallons, and in Colon the consumption was 625,371,800 gallons.

For further details of municipal engineering work see report of the

municipal engineer, Appendix A.

# METEOROLOGY AND HYDROGRAPHY.

The section continued in the charge of Mr. R. Z. Kirkpatrick, chief hydrographer, reporting to the engineer of maintenance. All of the meteorological stations as reported for last year have been continued in operation and additional stations were established as follows: A standard rain gauge was installed at La Palma in December, 1919, operated by the naval radio station at that point; at Divala, Province of Chiriqui; Mariato, Province of Veraguas; and at Mandinga Bay, Province of Colon, all in the Republic of Panama, during the dry season of 1920. These stations are not operated at the expense of The Panama Canal.

For the calendar year 1919 the rainfall was below normal at all stations in the Canal Zone and vicinity, except Cape Mala, Taboga, Chilibrillo, and Bocas del Toro. The greatest deficiency was 32.14 at Brazos Brook. At most stations October was the month of heaviest rainfall and March the month of lightest rainfall. The average annual rainfall in the Pacific section was 63.39 inches; in the Central section, 79.11 inches; and in the Atlantic section 109.89 inches. The greatest precipitation recorded in any one day was 9.09 inches at Porto Bello on August 23, 1919. The four months dry season rainfall for the fiscal year 1920 is the lowest of record since American occupation

in 1904, and the dry season conditions were prolonged until the middle of May, a full month longer than usual. The rainfall for the first six months of the calendar year 1920 was below normal throughout the Canal Zone and vicinity, the difference being most pronounced in the Atlantic section.

The average air temperature for the year was above normal. For the calendar year 1919 the maximum temperature recorded was 94° F., which occurred at Balboa Heights on February 6 and at Gamboa on April 11, and the minimum temperature recorded was 61° F., at

Alhajuela on March 22.

The annual wind movement in the Canal Zone for the calendar year 1919 was above normal; northwest, north, and northeast winds prevailed at all stations. The maximum wind velocity recorded for the year was 50 miles per hour, at Gamboa on September 26, and at Gatun on June 17. During the calendar year 1919 the evaporation over the surface of Gatun Lake was below the average of eight years. During the first six months of 1920 the evaporation was above normal, due to the unusual length and intensity of the dry season. The usual conditions of frequent night and early morning fogginess prevailed at the interior stations during the rainy season, and as usual all fogs observed were dissipated by 8.30 a. m.

There were 33 seismic disturbances during the fiscal year 1920; all were of moderate intensity and no damage was done to Canal struc-

tures.

For the calendar year 1919 the total yield of the Gatun Lake watershed was 17 per cent below normal, the average yield being 5,225 c. f. s., as compared with a nine-year average of 6,267 c. f. s. The maximum monthly average yield was 1,053 c. f. s. in October, and the minimum was 952 c. f. s. in March. The actual total yield for the calendar year 1919 was 164.79 billion cubic feet, of which 36 per cent was run-off above Alhajuela, 44 per cent from land area below Alhajuela, and 20 per cent direct rainfall on Gatun Lake surface. Of the total yields, 14 per cent, or 22.108 billion cubic feet, were lost by evaporation from the lake surface; 11 per cent, or 18.246 billion cubic feet, were consumed in lockages; 28 per cent, or 46.34 billion cubic feet, were consumed at the hydroelectric plant at Gatun; 46 per cent, or 76.044 billion cubic feet, were discharged over the spillways, and 1 per cent, or 1.89 billion cubic feet, were consumed at the water pumping stations, in leakages, and other losses.

At the beginning, on December 16, 1919, of the 1919-20 dry season, Gatun Lake was at its maximum stage of 87 feet. On account of the abnormal intensity and length of this dry season and of the increased consumption of water due to increased traffic in the Canal, the lake on May 28, 1920, soon after the close of the dry season, had fallen to elevation 81.77. On account of the rate of fall of the lake, and of the condition of Cucaracha slide, it was determined to conserve water by reducing the output of the hydroelectric generating plant at Gatun by 50 per cent and to supplement the necessary power by the operation of the Miraflores steam plant. This was done on March 3, and continued to June 3, by which date the lake had begun to rise at a sufficient rate to justify the full operation of the Gatun hydroelectric plant. If the hydroelectric plant had continued at its

normal output without interruption, the lake would have fallen to

elevation 80.55.

Nothing in the results following the abnormal dry season of this year has indicated the necessity for many years to come, if at all, of the creation of an additional reservoir by the construction of the Alhajuela dam. With the traffic developed to the capacity of the Canal and with the hydroelectric plant at Gatun operated at its maximum ultimate capacity, it will always be necessary to waste water over the spillways during the rainy season. During a part of abnormal dry seasons it will probably be necessary to conserve water, as was done from March to June of this year, by reducing the output of the hydroelectric plant at Gatun and by generating the deficiency in the operation of the steam plant at Miraflores. As the other work of the surveys office permits, additional surveys are being made of the upper Chagres Valley for the purpose of accumulating data for estimating the volume of water that may be impounded above Alhajuela, if in the future it becomes apparent that the additional reservoir is advantageous.

Reference is made to Appendix A for other details.

# SECTION OF SURVEYS.

Mr. O. E. Malsbury continued as assistant engineer in charge of this section, reporting to the engineer of maintenance. The section conducted all surveys for the land office of the Canal and Panama Railroad and maintained the establishment of Canal Zone monuments, triangulation stations, and bench marks. It also made surveys and prepared maps for the Army and Navy and for the joint land commission, as required. Corner and grade stakes were set on 43 lots in the city of Colon, on 1 lot in Cristobal, and on block 23 in the city of Panama.

Observation at points on Gatun dam and of the south approach walls at Gatun were continued, indicating normal conditions. The entire 5-mile limit line of the east side of the Canal Zone was cleared and marked with 168 extra monuments. On the west side of the Canal the 5-mile limit line between the Canal Zone and the Republic of Panama was cleared and marked with 10 extra monuments.

A new triangulation station was established in the vicinity of Fort Clayton Military Reservation, and four new stations were established in the vicinity of upper Chagres River on which to tie the survey of the Alhajuela Basin. Various surveys were made for the supply department, health department, and electrical division, as described in the appendix. Boundary lines of military and naval reservations in the Canal Zone were established and maintained.

For further details see Appendix A.

# OFFICE ENGINEER.

This work continued in the charge of Mr. C. J. Embree, under the supervision of the engineer of maintenance, and included the engineering, architectural, and miscellaneous design work for all divisions of the Canal except the mechanical division.

There was a total of 685 working drawings issued, of which the most important were for the building division and electrical division.

The office issued during the year 224,670 square feet of blue prints, 19,653 square feet of white prints, and 8,715 square feet of brown prints, at an average cost of  $1\frac{1}{8}$  cents per square foot.

# DREDGING DIVISION.

This division continued in charge of Mr. J. M. Pratt, superintendent of dredging, under the direction of the engineer of maintenance. It was charged with the maintenance of the Canal prism and of the approach channels to the docks and coaling plants at the Canal entrances, and with the sand and gravel production from the bed of

the Chagres River.

The total amount of material of all kinds excavated by the dredging plant was 4,750,686 cubic yards, at an average cost of  $34\frac{1}{8}$  cents per cubic yard. Of the material excavated, 3,333,961 cubic yards were earth and 1,416,725 cubic yards were of rock. Except for 120,676 cubic yards of sand and gravel production, the cost just stated includes the transportation and dumping. For the sand and gravel production, costs include delivery alongside the gravel dock at Gamboa. A total of 3,711,810 cubic yards was removed from the limits of the Canal prism, distributed geographically as follows: From Atlantic Ocean to Gatun, 0; from Gatun to Gamboa, 7,400 cubic yards; from Gamboa to Pedro Miguel, 2,121,710 cubic yards: from Miraflores Lake, 0; and from Miraflores to Pacific Ocean, 1,582,700 cubic yards. Of these amounts all were chargeable to maintenance except 17,800 cubic yards chargeable to construction between Miraflores and the Pacific Ocean. Within the limits of the Canal prism there remained on June 30, 1920, to be removed 155,400 cubic yards chargeable to construction and 3,286,900 cubic yards chargeable to maintenance.

The large amount of dredging done in Gaillard Cut section was due to the renewed activity of Cucaracha slide, 77 per cent of the total yardage reported in this section having been removed from that obstruction. The slides at Culebra were quiescent throughout the year, except for a small movement of the East Culebra slide in the latter part of October, 1919, requiring the excavation of 272,000

cubic yards from October 16 to December 27.

In August, 1916, a movement in the old slide area at Cucaracha closed the Canal to traffic for a period of eight days. Equilibrium was restored after the removal of 1,054,757 cubic yards from the Canal prism and the excavation of a small basin in the bank of the Canal. Within the area of the disturbance, but not affected by it, was a high ledge of rock extending diagonally from a massive hard rock promontory, locally called "Purple rock," at the edge of the Canal, to Gold Hill, at a point 1,200 feet from the Canal. By its resistance this ledge retained and prevented the motion of the mass of material behind it. The first indication of new disturbance was a surface movement of the mass behind the rock ledge that began during the heavy rainfall of October, 1919, and which forced material over the ledge and into the Canal. This condition continued without serious results until February 21, 1920, when a large general movement occurred carrying huge masses of earth and rock into the Canal prism and obstructing the channel, except for small draft ships. The operations of the large dipper dredges accomplished the removal

of the obstructions at a sufficient rate to keep the Canal open to all traffic with the exception of occasional delays in February, March, Twenty-seven ships were delayed an average of two days, the maximum delay to any ship being four days. By June 12, 1920, the channel had been restored to full dimensions and at the date of this report a basin has been created by excavating the broken bank throughout the full length of the slide and for an average width of 250 feet outside the limits of the Canal.

Between February 21, the date of the first obstruction, and September 1 a total of 1,890,800 cubic yards was removed by the dredges, at an average cost, including transportation and dumping of the dredged material, of 37½ cents per cubic yard.

When stability was secured after the movement of 1916, it was

expected that no more serious difficulty would be experienced at-Cucaracha, and this expectation was strengthened by three years of quiescence. The renewed activity was obviously due to the failure of the rock ledge referred to above, which finally yielded under the pressure of the material behind it and left that material free to move

toward the Canal.

The slide at Cucaracha has always been free from one of the difficult features of the slides at Culebra, which closed the Canal in 1915-16. At the latter place the disturbance extended to a depth below the level of the bottom of the Canal and shoals were formed by the upheaval of the bottom. At Cucaracha the bottom has remained undisturbed, and we have had to handle only the material that actually moved from the banks. The present situation is that all obstructions have been removed, the motion is much retarded, and a new period of stability is approaching. For several months to come it may be necessary to operate a dredge to keep pace with the movement, but the creation of a basin permits the work to be done outside the limits of the Canal prism, and therefore without interference with traffic. As the failure of the rock ledge referred to above has removed the resistance to motion of the broken masses of earth and rock within the limits of this extensive break in the bank more than one-half mile from the Canal, it is probable that intermittent movements will occur until stability is attained, and that when attained the stability will be permanent.

On account of the large amount of material removed from the slide, it is not probable that sudden movements of large masses will again occur, or that further movements will be more rapid than the

rate of removal by the dredges.

Plates Nos. 8 and 10 show the conditions existing at the worst stage of the slides, and plates Nos. 9 and 11 the present conditions.

The plant operated by the dredging division continued as reported last year, except that the large seagoing ladder dredge Corozal was sold to the United States Engineering Office, Philadelphia, and delivered to representatives of that office on November 7, 1919. Inspections were made from time to time of the slide areas in Gaillard Cut with special reference to drainage conditions and evidence of lack of stability. Where necessary, ditches were excavated and banks sloped by the hydraulic graders to facilitate the drainage of the banks. The usual work of destruction of water hyacinths was continued. During the year 2,500,000 plants were pulled and

destroyed, and 403,500 square yards were cleared by spraying with an arsenic solution.

For further details of dredging division operations, see Appendix A.

### MARINE DIVISION.

Capt. L. R. Sargent, United States Navy, remained in charge of this division until April 15, 1920, when he was relieved from duty with the Canal by orders from the Navy Department; he was suc-

ceeded by Capt. E. P. Jessop, United States Navy.

The floating equipment was increased during the year by the return of the Canal tugs La Boca and Miraflores, which had been loaned to the War Department for service during the war, and by the acquisition from the Navy Department, for use and custody of the Canal, of the U. S. S. Favorite, a vessel of 500 tons dead-weight, for service as a lighthouse tender and as a salvaging vessel. The Favorite takes the place of an old French clapet that has been used as a lighthouse tender and that has been worn out in the service.

A two-story concrete building located at Gatun was completed and is occupied as a combined storehouse, repair and office building

for the lighthouse subdivision.

The board of local inspectors, under the supervision of the marine superintendent, made the prescribed semiannual inspections of all floating equipment of the Canal and Panama Railroad, and, in addition, inspected in dry dock 42 hulls of commercial ships and Canal and railroad plant. Inspections and tests were made of 67 boilers in floating equipment, 60 on Canal and railroad plant, and 7 on vessels belonging to the United States Army. Licenses were issued to 10 pilots, 13 masters, 21 mates, 30 engineers, and 126

navigators of motor boats.

A total of 2,478 commercial vessels made the transit of the Canal, 1,180 from the Atlantic to the Pacific and 1,298 in the reverse direction. Commercial cargo carried through the Canal amounted to 9,374,499 tons, of which 4,092,516 tons were from the Atlantic to the Pacific and 5,281,983 from the Pacific to the Atlantic. Three hundred and twenty-nine ships, with a cargo tonnage of 1,129,616, passed through the Canal in ballast; 105, with a tonnage of 458,383, were northbound, and 224, with a tonnage of 671,233, were southbound. United States Government vessels transiting the Canal free of tolls aggregated 266, of which 51 were northbound and 215 southbound. Of these 218 pertained to the United States Navy, 18 to the Army, and 30 were merchant ships with naval cargo. The ton-nage transported by these ships amounted to 365,898, of which 150,814 tons were in naval vessels, 27,275 in Army vessels, and 187,809 tons were transported in merchant vessels under control of the Navy. Five naval vessels of other nations, totaling 69,536 tons displacement, transited the Canal. The traffic for the year showed an increase as compared with the preceding year, in vessels, tonnage, and cargo, amounting, respectively, to 22.37 per cent, 39.38 per cent, and 36.31 per cent. The number of commercial vessels transiting the Canal was 16.34 per cent above all previous yearly records. The distribution as to nationalities of the ships transiting the Canal during the year was as follows: United States, 1,129; British, 753; Japanese, 118; Norwegian, 106; Chilean, 79; Peruvian, 75; French, 60; Spanish, 41; Dutch, 29; Italian, 26; Swedish, 19; German, 17; Danish, 9; Panamanian, 4; Brazilian, 3; Chinese, Portuguese, and Russian, 2 each; Belgian, Colombian, Costa Rican, and Uruguayan, 1 each. For further details attention is invited to Appendix B.

# MECHANICAL DIVISION.

The work of this division continued in the charge of Commander E. G. Kintner, United States Navy, as superintendent. The principal changes and additions to plants included the installation at Balboa shops of a reclaiming roll for rerolling miscellaneous steel and iron scrap into round and rectangular section rods and bars; the roofing over of the space between buildings 2 and 3, Balboa shops, to relieve the congestion of the pipe shop; the installation of a large horizontal boring mill at the Balboa shops; and the construction (in progress) of a light repair shop adjacent to the commercial piers in Cristobal to facilitate repairs to ships at those piers.

The average force employed in the shops was 2,869 per month, 1,002 gold and 1,867 silver employees, as compared with corresponding averages of 696 gold and 1,658 silver employees for last year.

The value of work performed was \$6,454,219, of which 59.87 per cent was marine work, 19.73 per cent railroad work, 12.17 per cent miscellaneous, and 8.23 per cent manufacturing. Of the total work performed 35.09 per cent was for the Canal, 43.38 per cent for individuals and companies, 17.16 per cent for the Panama Railroad, and

4.37 per cent for Government departments.

At the Balboa dry dock 16 vessels were docked pertaining to the United States Army and Navy, 33 pertaining to The Panama Canal, and 34 belonging to outside commercial interests. At the Cristobal dry dock corresponding figures were 22 ships belonging to the Army and Navy, 20 to the Canal, and 43 to outside commercial interests. The total number of vessels, other than tugs, barges, and dredges, on which work was done was 1,064—422 at Balboa shops and 642 at the

Cristobal shops.

The principal items of work at the Balboa shops include: Completion of overhaul and repairs to ex-German merchant steamers Uarda (renamed Salaverry) and Anubis (renamed Paita); the former was delivered for operation on July 14 and the latter on October 6, 1919, the Anubis having been considerably delayed by nondelivery of parts from the United States, held up by strikes; completion of the repairs and alterations to the steamship Cristobal, of the Panama Railroad Steamship Line, the work including not only a thorough overhaul but also very extensive alterations. The vessel was changed from a coal burner to an oil burner; the accommodations for officers and crew were rebuilt; the passenger space was entirely changed and greatly enlarged, as was also the cold-storage system. The overhaul included installation of new boilers, refitting of main engines and practically all auxiliaries in the ship. The steamship Azov was given a general overhaul of machinery and repairs in dry dock to the hull, including renewal of about 25 shell plates, numerous frames, and the lower half of the stem. The U. S. S. Melville, after arriving at this plant in tow in a disabled condition, with boilers out of commission, had installed modified furnace fronts and certain changes in her oilburning system. The U.S. battleship Rhode Island was placed in dry dock on account of a broken outside coupling. Repairs were made to the strut fastenings which had been loosened; new coupling and new propeller shaft were made from rough machined spares carried by the vessel. The Navy Department ordered this vessel to proceed to Mare Island Navy Yard under one engine, when it was found, after removal of the stern tube shaft to the shop, that it was cracked; there was no material on the Isthmus available for the manufacture of this part. The Peruvian cruiser Lima received extensive repairs, particularly to the boilers and hull structure in the vicinity of the machinery spaces, rudder, and steering gear. A new radio house was constructed; also a new pilot house. The steamship Acajutla, belonging to the Pacific Steam Navigation Company, was altered from coal burning to oil burning, and received extensive repairs to her hull and machinery. The United States submarines stationed at Coco Solo were dry-docked and given miscellaneous repairs. The steamship Olockson (owned by the United States Shipping Board), which had been sunk near the Pacific entrance to the Canal to extinguish a fire in the cargo of gasoline, was salvaged. Dredges, scows, and tugs of the dredging division were overhauled and repaired. On account of the slides which took place this year the amount of these repairs was considerably increased. Four new 61-foot steel-frame passenger coaches were completed in the car shop and put into active service. These cars are notable on account of being trimmed with caoba blanca, a native wood; they were finished in the natural color. Twenty-five 40-ton flat cars were rebuilt for the Alaskan Engineering Commission.

The principal items of work at the Cristobal shops included: The steamship Culebra received extensive repairs and alterations in connection with restoring her from her condition as a cattle carrier to her previous condition as a seagoing dredge; the vessel was moved to Balboa shops on April 6, 1920, for the completion of the work on account of the many interruptions at Cristobal; salvage of the steamship *Marne* (owned by the U. S. Shipping Board). This vessel was raised after being sunk in Cristobal Harbor to extinguish a fire in the cargo of benzine. The vessel caught fire a second time and sank in the harbor on account of an explosion; she was again raised and

unloaded.

For further details of the operations of the mechanical division see Appendix C.

SUPPLY DEPARTMENT.

The operations of this department continued under the charge of

Mr. R. K. Morris, chief quartermaster.

Labor.—The force for the month of June, 1920, consisted of 4,608 employees on the gold roll and 17,023 on the silver roll. In June, 1919, there were 3,290 employees on the gold roll and 17,071 on the silver roll. The increase in the gold roll was principally due to the operations of the building division in the construction of the Army posts and of the mechanical division in the larger repair jobs for steamships. There was a slight increase in the gold roll on account of the displacement of certain alien employees on the silver roll. The maximum number of employees on the silver roll was in February,

when 18,231 were employed, and the minimum number in November,

when 16,243 were employed.

Quarters.—Applications on file for family quarters, gold employees, were 618 on June 30, 1920, as compared with 306 on June 30, 1919. On the silver roll there were 747 applications on file on June 30, 1920, for family quarters. By arrangement with the War Department, the old Canal village of Las Cascadas, which was turned over to the Army for occupation by troops in 1910, was turned back to the Canal in October, 1919. Sixteen of the quarters suitable for the purpose were removed from Las Cascadas and recreeted for quarters of gold employees in existing Canal towns. The remainder of the buildings were made available for rental to a selected class of silver employees temporarily out of work, with allotments of land for their use in gardening, poultry raising, and growing of fruit trees to assist in the support of themselves and their families. At the end of June, 1920, 40 families had taken advantage of this opportunity to have a home at a nominal cost.

Transportation facilities.—Animal transportation was further reduced and replaced by motor transportation during the year. The animals still in the service were used for drawing mowing machines, garbage wagons, and material wagons where roads do not permit the use of trucks. On June 30, 1920, 29 horses and 143 mules were in the transportation service, a reduction of 10 horses and 51 mules from the figures of a year ago. The motor vehicles in service on June 30, 1920, and for the same date last year are shown in the

following table:

	1919	1920		1919	1920
Ford cars, ½-ton delivery. 1-ton trucks 1½-ton trucks 3½-ton trucks 2½-ton trucks (electric). 2-ton trucks Ford passenger cars.	47 7 15 3	57 78 7 15 3 4 16	Combination passenger and de- livery, changeable. Hearses. Ambulances. Motor cycles. Buss, 1½-ton.	1 7 56	17 2 8 58 1

In the cattle industry there were in service on June 30, 1920, 208 horses and 110 mules, corresponding figures for last year being 190

horses and 137 mules.

Materials and supplies.—The total value of materials received during the fiscal year was \$7,812,258.86, as compared with \$7,832,-845.61 for the previous year. The value of materials issued from the different storehouses was \$11,966,308.81, as compared with \$12,157,-090.24 for the previous year. The value of materials on hand June 30, 1920, was \$5,249,300.15, as against \$6,001.451.24 on June 30, 1919. The value of materials of all classes sold from the storehouses of the supply department was \$3,025,698.18. Sales were made to 3,265 steamships to the amount of \$1,274,556.18, being an increase of \$97,039.85, as compared with last year. A total of 248,294 requisitions and foremen's orders was handled, distributed as follows: General storehouse, Balboa, 156,415; Cristobal storehouse, 76,243; Paraiso storehouse, 15,636. The consumption of cement for the year was 158,089 barrels.

tons of American scrap were sold.

Obsolete material.—Two scrap shears were purchased and installed at Mount Hope scrap yard to facilitate the cutting and classifying of scrap in order to secure more favorable prices. It is expected that all scrap now on hand will be cut up, classified, and sold by December 1, 1920, at which time the scrap shears will be moved from Mount Hope to the general storehouse at Balboa, from which point all future scrap operations will be handled. During the year 20,378

Fuel-oil tanks.—Contract was entered into with the West India Oil Company to furnish 300,000 barrels of fuel oil at \$1.12 per barrel, delivered into Panama Canal tanks at Mount Hope, and 700,000 barrels at \$1.29 per barrel delivered into Canal tanks at Balboa. This contract expired on June 30, 1920, but with the privilege of renewal to December 31, 1920. In view of the favorable price the Canal exercised its option of renewal. Two 55,000-barrel capacity concrete tanks under construction during the year, one at Balboa and one at Mount Hope, were 90 per cent complete. The total amount of fuel oil handled by the Balboa and Mount Hope plants amounted to 5,620,986 barrels, including both receipts and issues; 1,195 vessels were fueled during the year. The amount of 484,045 gallons of bulk gasoline was obtained from the purchase of salvaged cargo of the steamship Olockson, which was wrecked by fire in the vicinity of the Pacific entrance to the Canal.

Panama Canal press.—The value of stock on hand at the close of the year was \$109,605.55, as compared with \$98,103.52 for the preceding year. The increase was due to additional stock required for the printing of commissary coupon books. On account of the high price in the United States, it was decided to install a plant for the printing of our commissary coupon books, with an estimated saving of \$30,000 annually. The total value of material issued from the printing plant was \$158,406.79, as compared with \$147,627.39 for the

previous year.

Subsistence.—The supply department operated the hotels Tivoli and Washington, Hotel Aspinwall, on Taboga Island, three cafeterias, four restaurants, and two lunch rooms for gold employees, and three labor messes for silver employees. The line restaurants and cafeterias showed a net loss of \$4,755.84, and the labor mess a profit of \$5,516.84. The Hotel Tivoli was operated at a net profit of \$15,763.47, and Hotel Washington was operated at a net profit of \$24,046.01. The patronage at the Tivoli and Washington showed a marked increase during the dry season on account of increased travel of the general public after the removal of travel restrictions caused by the war.

Commissary division.—The general market conditions were abnormal throughout the year, and it was difficult to secure and maintain an adequate supply of all commodities. There was a reduction of stock on hand and in investment in commissary stocks. There was an increase in the business done by the bakery, coffee-roasting plant, Cristobal laundry, ice plant, milk-bottling plant, and industrial laboratory. The abattoir, ice-cream plant, sausage factory, and Ancon laundry did a decreased volume of business. On account of suspension of beef shipments to the Army in the United States, fewer cattle were slaughtered than for 1919, but the local consumption was greater. The Costa Rican agency, which had been suspended on

account of uncertain transportation facilities in 1919, was reopened following the renewal of regular steamship service. This agency supplies vegetables and fruits, and occasionally sugar and coffee, in better condition and at less price than afforded by the markets of the United States. By-products from the abattoir to a total value of \$589,142.67 were shipped to the United States and there sold. During the year a total of 6,256,941 pounds of beef were exported to the Army in the United States. The total area cleared for pastures in the Canal Zone is 46,165 acres.

For further details see Appendix D.

# ACCOUNTING DEPARTMENT.

This department continued in the charge of Mr. H. A. A. Smith, as auditor. Mr. E. P. Sine resigned his position as collector and was succeeded by Mr. T. L. Clear, the former collector, upon his return from service overseas in the Inspector General's Department of the United States Army, in September, 1919. Mr. J. H. McLean, paymaster, resigned on November 15, 1919, and Mr. R. W. Glaw, assistant paymaster, was promoted to fill the vacancy on January 24, 1920.

The paymaster disbursed a total of \$38,426,733.29, of which the sum of \$15,134,762 was on account of the Panama Railroad Company. Employees on the gold roll of The Panama Canal were paid \$8,391,066.16, and employees on the silver roll \$6,505,810.88. The sum of \$8,395,094.25 was paid on miscellaneous vouchers. Collections by pay-roll deductions were \$5,191,946.63, of which the sum of \$4,220,524.88 was collected for coupon books. Of the total collections on pay rolls, the sum of \$4,948,704.48 was disbursed directly, by the paymaster, the balance \$243,241.95 being transferred to the collector's accounts. A total of \$1,224,000 in cash was imported from the United States by the paymaster. The collections repaid to appropriations amounted to \$14,745,634.31, as compared with \$10,364,875.07 during the previous year. The sum of \$8,848,978.06 was collected for deposits as miscellaneous receipts.

For the payment of tolls and bills for supplies and services, there were deposited with the Assistant Treasurer of the United States to the credit of the collector \$2,287,783.21. Deposits for the same purpose made with the collector on the Isthmus amounted to \$18,631,811.32. The direct deposits with the collector on the Isthmus for tolls and other bills show an increase of \$6,500,000 over the figures of last year, and the deposits with the Assistant Treasurer of the United States to the credit of the collector show a decrease of over \$2,000,000. The total deposits, \$20,919,594.53, exceed the

total for last year by \$4,476,220.50.

Money order funds to the amount of \$1,501,000 were transferred to the Postmaster General of the United States in payment of money orders drawn on the United States. Collections on account of the Panama Railroad Company amounted to \$21,532,848.43, an increase over last year of \$1,191,903.47. The tolls actually collected for vessels transiting the Canal amounted to \$8,496,633.40. The total earned amounted to \$8,516,469.80, and the sum of \$19,836.40 remaining unpaid being charges on certain Government vessels that may not be finally held liable for the payment of tolls.

As a matter of interest it will be stated that the tolls earned for the year would have been \$9,955,754.32 if the Panama Canal rules of measurement had been applied in all cases. The total loss to the Canal since it was opened to traffic on account of the present legal restrictions to the application of the Panama Canal rules of measurement amounts to \$5,109,904.24 to June 30, 1920. Benefits to vessels on account of the existing rules of measurement are distributed as follows:

•	American.	Foreign.
Vessels plying between American ports	\$237, 956, 85	\$67, 881. 50
Vessels plying between American ports and canal ports	97, 956, 05	1, 325.90
Vessels plying between American possessions and American ports	34, 908, 60	43, 495. 75

These figures, subtracted from \$5,109,904.24, give the sum of \$4,626,379.59 as the amount of saving to vessels engaged in foreign trade.

The total appropriations for the Canal and its immediate adjuncts by Congress to June 30, 1920, amount to \$467,431,257.41. Deducting from this total the amounts appropriated for annual payments to the Republic of Panama, \$2,500,000, regulating commerce and censorship of mails, \$170,000, fortifications, \$34,658,400.81, and for operation and maintenance, \$50,511,914.68, leaves \$379,840,941.92 appropriated for the construction of the Canal and its immediate adjuncts. Of the total appropriated for construction, \$4,329,898 for colliers and coal barges, \$2,093,190 for pier No. 6, Cristobal, \$300,000 for work on the colliers Ulysses and Achilles, and \$720,000 for reboilering and repairing the steamships Ancon and Cristobal, were specifically exempted by law as a charge against the amount of the authorized bond issue. These being deducted from the total appropriations for the construction of the Canal and its immediate adjuncts, gives the sum of \$372,397,853.92 as chargeable to bond issue, and makes available for appropriation within the limit of the cost of the Canal and the authorized bond issue the sum of \$2,825,302.08.

Current appropriations.—The cash balance of the current appropriations for operation and maintenance, sanitation, and civil government, and for construction, on June 30, 1920, amounted to \$12,347,642.76. Including the amount of the accounts receivable and transfer of appropriations to be made in payment for work done and supplies furnished, the total of the cash and cash items was \$16,325,017.48. The liabilities immediately payable, including the amount to be paid the United States Shipping Board for the two coal barges, which are now in service, amount to \$6,004,775.71. The additional ordinary obligations outstanding, viz, \$3,601,343.84 on outstanding orders, \$3,480,460.30 on unfilled requisitions, and \$2,234,701.77 on allotments for special work, make a total of the regular obligations of \$15,321,281.82, and leaves a balance of \$1,003,736.26. This balance is a great deal more than offset by the reserves for repairs (\$484,268.74) and by the amount due employees for leaves earned (\$813,591.01)—a large portion of both of which may be required at any time—and by the reserves for depreciation on equipment, \$2,442,029.86.

As stated last year, too much stress can not be given to the necessity of keeping the appropriations for Canal operations and main-

tenance on a continuing rather than on an annual basis, and to the maintenance of an adequate cash balance to carry on the business operations. Work for the Army and Navy has been done on a very large scale in the past and will continue to be done. Delays in payment seemingly can not be avoided. This throws a burden on Canal funds that must be recognized and provided for. cash balance with which to operate can be provided by a special appropriation, or, what is believed to be better and more in keeping with the law relative to the business operations of the Canal, by considering the reserves for depreciation as direct obligations against the appropriations for operation and maintenance. Fluctuations in the value of stock on hand directly affect the cash balance, and if the value of the stock falls below the amount authorized for investment in stock, then the difference must be considered as a direct obligation chargeable to the appropriation at any given time.

The ordinary expenses for operation and maintenance, including those of civil government and sanitation, were \$6,548,272.43, against \$6,112,194.77 expended in 1919. The expense of maintaining dredging increased from \$1,152,188.99 to \$1,611,359.78, due to the slides in Gaillard Cut. Offsetting the total expense of operation and maintenance are the amounts earned as tolls, \$8,493,082.56; the amount collected as licenses and taxes, court fees and fines, \$153,102.88, and as net profits on business operations, \$239,686.13, or a total of \$8,885,871.57. The revenues earned were thus in excess of current expenses by \$2,387,594.14. At this rate, by June 30, 1921, the collections for tolls and other Canal revenues will exceed by \$1,000,000 or more the total current expenses of operation and maintenance of the Canal to that date, after which there should be an excess of \$5,000,000 or more each year.

The total revenue derived from business operation carried on with Panama Canal funds amounted to \$14,705,371.82, as against a total of \$13,684,881.18 received during the preceding year. There was in 1920 a net profit of \$239,686.13 to be covered into the Treasury as miscellaneous receipts. The annual increases in business operations at the Canal is shown by the following table, giving the number and amounts of formal bills:

Year.	Number of bills.	Amount.	Year.	Number of bills.	Amount.
1915 1916 1917		11,786,187.91	1918. 1919 1920.	24,210	\$20, 887, 460, 60 25, 272, 815, 50 28, 654, 731, 64

The capital expenditures from construction appropriations total a little in excess of \$1,000,000, the principal items being as follows: Dredging inner harbor at Balboa, \$34,916.25, involving the removal of 63,050 cubic yards of material at an average division cost of \$0.4991 per cubic yard, of this material 84 per cent was earth and 16 per cent rock; sanitary fills and ditches, \$9,503.54; settlement of claims for private property within the Canal Zone, \$546,217.05; completion of Ancon hospital buildings, \$19,877.26; the new garbage incinerator at Cristobal, \$115,873.52; and completion of Pier No. 6, at Cristobal, \$113,471.94. There was also transferred to the construction account about \$900,000 which had heretofore been tentatively charged to operation and maintenance funds. The main items included in this amount were: Dredging Cristobal Harbor, \$130,000; extensions to the electric current system, \$233,000; fuel oil plants, \$82,000; shop additions, \$186,000; work on locks, \$160,000 aids to navigation, \$53,000. Amounts allotted to construction appropriation and available for expenditure include \$2,329,898 for the two new coal barges, \$250,000 for work on the colliers *Ulysses* and *Achilles*, \$325,000 for dredging, and \$81,000 for the payment of land claims, with certain other small items totalling a little in

excess of \$3,000,000.

The charges to capital additions covering expenditures for permanent improvements the cost of which was payable from operation and maintenance appropriations were a little in excess of \$900,000, of which the main items were: Extensions to the power and lighting system, \$84,858.56; additions to fuel oil plant, \$90,219.50; new garages, \$20,425.56; fills, roads, and sewer systems, New Cristobal, \$187,369.43; terminal storehouse and shop building, Cristobal piers, \$46,182.33; fenders, Miraflores locks, \$9,623.32; road from Balboa shops to Diablo, \$34,452.44; repairs to Docks 13 and 14, Balboa, \$32,481.84; quarters for gold employees, \$183,000; quarters

for silver employees, \$48,000; and miscellaneous, \$87,061.14.

The total expenditures for construction of public works in the cities of Panama and Colon from 1904 to the end of the fiscal year were \$1,430,208.91 and \$1,220,382.03, respectively. The total expenditures for operation and maintenance of public works were \$911,083.54 for Panama and \$798,127.58 for Colon. Under the agreement with the Republic of Panama all expenditures incurred by the United States for construction, operation and maintenance of waterworks, sewers, and pavements in the cities of Panama and Colon are to be reimbursed to the United States within a period of 50 years from July 1, 1907. Besides being authorized to currently reimburse itself from water rental collections for expenses of the operation and maintenance, the United States liquidates the expenditures for construction by quarterly charge of one-fourth of the part of the capital cost, ascertained by dividing the amount thereof by the number of years the contract has to run. In addition, the Republic of Panama pays interest at the rate of 2 per cent per annum on the capital cost balances and on the proportionate cost of waterworks in the Canal Zone used for supplying water to the two cities, based upon the quantity consumed. To liquidate the capital cost there has been paid to the United States, or is immediately due, the sum of \$563,-442.21, leaving a balance unpaid of \$1,106,926.48 for the work in Panama, and \$980,222.25 for the work in Colon, payable in installments during the contract period. The amount which is payable immediately under the agreement is \$94,179.05 and is covered by bills for the difference between the current charges for the work, plus the quarterly payments required, and the amount collected as water rentals. The Panama Canal continues to maintain the pavements in the two cities under a temporary agreement effected at the beginning of the fiscal year 1918, under which reimbursement is still obtained through water rental collections.

There were audited prior to payment 403,231 pay roll items. Upon the final audit by the auditor for the War Department, 65 errors were discovered, involving the sum of \$274.58. The total

amount of the rolls involved was \$15,141,321.37. The gross deductions on pay rolls aggregated \$6,650,009.19. There were 347 examinations of the accounts of employees of The Panama Canal and Panama Railroad charged with the collection, disbursement and custody of Canal and railroad funds.

The time inspection forces checked the timing of 10,442 gangs, with a total of 519,869 employees. On account of corrections made in the timebooks by the inspection forces, there was a saving of

\$3,822.90

Under the provisions of section 5 of the Panama Canal act, two claims for damages to vessels passing through the locks were settled, amounting to \$7,243.51; also two claims amounting to \$2,361.98 for damages to vessels in the Canal outside of the locks. Minor damages to vessels were repaired at an expense of \$5,179.12. The total expense for all claims of this kind was \$14,784.61, all settled without recourse to the courts; corresponding figures for the previous year were \$16,739.19.

The schedule bonds of employees of The Panama Canal and Panama Railroad, executed to insure the faithful performance of their duties, were continued with the Maryland Casualty Company. The total liability for Canal employees was \$430,000 and for railroad employees \$381,000. No claims were made during the year against the surety

company for defalcations of employees.

Commissary books for the payment of commissary and other purchases from the Canal were issued to employees on pay roll deductions to the value of \$5,627,605, which was \$1,100,000 in excess of the issue for the preceding year. The total issue, including cash and pay roll deduction sales, was \$7,727,437.50, as compared with a total of \$6,510,997.50 for the preceding year. Meal tickets to the value of \$46,329.50 were used by employees on the silver roll, a reduction of \$21,000 from the amount used during the previous year.

The unexpended balance in the Canal Zone funds, amounting to \$6,220.11 was deposited in the Treasury as miscellaneous receipts. The collections for licenses and taxes were \$15,354.05; court fees and fines, \$27,694.45; postal receipts, \$109,117.48, with miscellaneous items amounting to \$57,210.07, making a total of \$209,376.05; the corresponding figures for the previous year being \$136,376.29. The cash balance of miscellaneous trust funds in the hands of the collector increased from \$683,085.95 on June 30, 1919, to \$780,757.96 on June 30, 1920. There were issued 125,122 money orders to the value of \$3,198,989.98, an increase of \$90,311.71 over the previous year. Since the establishment of the money-order business on the Canal Zone, 2,454,002 money orders have been issued, to the value of \$57,524,064.81.

The revenue derived from the operation of the various clubhouses amounted to \$427,118.67, as compared with \$463,409.39 received during the prior year. The expenditures amounted to \$452,600.34.

For settlements under the injury compensation law there were pending 4 death cases and 141 injury cases at the beginning of the year. Three of the death cases were approved and 1 was disallowed; 16 of the injury cases were disallowed, the remainder being approved for payment wherever the time lost was in excess of 3 days. There were reported 4,451 accidental injuries and 17 accidental deaths of employees during the year. Compensation was allowed in 1,471

cases of injury and 3 cases of death. Ten death cases are pending on account of injuries and deaths during the past year. There was paid to employees for injuries \$17,705.17; to beneficiaries for deaths of employees, \$3,946.67; to persons injured during the year there was paid the sum of \$25,123.68; and to beneficiaries of employees dying as a result of injury in line of duty, \$549.83. The payment of \$1,200 to five inmates of the Corozal farm was authorized upon their repatriation.

For further details see the report of the auditor, Appendix E.

### EXECUTIVE DEPARTMENT.

This department continued under the Governor, assisted by Mr. C. A. McIlvaine, as executive secretary. In addition to the routine reports of different subdivisions of this department, the following general remarks are submitted with reference to matters affecting the compensation and living conditions of employees of the Canal and Panama Railroad:

A census taken by the police division in June, 1920, shows a total civilian population of the Canal Zone of 21,650, of whom 9,529 were employees. Three thousand four hundred and thirty-four were male Americans, 5,652 male aliens, 369 female Americans, and 74 female aliens. The turnover in force of Americans, represented by new employees and separations from the service, was approximately 30 per cent. There was an increased emigration to Cuba and the United States of the labor force of West Indians, but there remained available at all times a larger force than was required by the Canal and railroad. Careful analyses show increases in the cost of living in the Canal Zone since 1914 as follows: Food, 101.11 per cent; clothing, 71.59 per cent; household expenses, 105.30 per cent; and

personal expenses, 65.47 per cent.

Adjustments were made from time to time of the rates of pay of American employees on the gold roll in accordance with the policy of allowing an increase of 25 per cent above current rates in the United States for similar employment. A general exception to the rule of granting the full 25 per cent increase was made in the case of all employees whose basic rate in the United States was affected by the legislative bonus increase of \$240 per annum. This exception was made on account of lack of appropriations in the civil government branch to pay the increases on account of the additional \$120 bonus in the United States. The additional compensation to Canal employees on account of the increased bonus is reserved pending further action of Congress. Adjustments have been made from time to time in the compensation of West Indian employees in order to meet the increased cost of living. In these adjustments the rates effective in 1914 were taken as a basis and the minimum rates and earnings were given primary consideration, since it is on the lowest paid classes of workmen that the burdens and increases of living costs are heaviest. The following statement shows the general trend of wages for the common labor class since 1914:

	nts h <b>our.</b>		ents hour.
May 1, 1914. January 1, 1917. October 1, 1917. May 1, 1918.	12 13	July 1, 1919	. 19 . 21

Immediately following the adjustment of February 1, 1920, the organization of West Indian employees demanded an increase of 7 cents an hour and certain other changes in conditions of employment. The refusal to grant these demands was met with a strike on February 24, when from 15,000 to 17,000 men quit work. Thanks to the readiness of the American employees to turn to whatever work the exigencies required, the Canal was kept in operation without interruption on account of the strike. The strike was broken by the return of the men to work on March 2, and the general rule was followed of reemploying the mass of strikers who were not leaders as new employees, with a loss of certain rights and privileges pertaining to continuity of service.

# BUREAU OF CLUBS AND PLAYGROUNDS.

Clubhouses were operated for gold employees at Balboa, Ancon, Pedro Miguel, Gatun, and Cristobal; also for silver employees at La Boca, Red Tank, Paraiso, Gatun, and Cristobal. The clubhouse building at Balboa was improved by an enlargement of the reading room and the installation of bookcases in the library. The main floor of the Cristobal clubhouse was enlarged by the removal of the side walls of the building and the inclusion of the porch in the floor area. Local entertainments were given as usual, and entertainers have come down from the United States about once in two months. Moving pictures were exhibited in all clubhouses. The Balboa clubhouse has supervised the physical education of the grammar schools and of the high schools. One of the most useful and successful benefits of the physical education developed was instruction in swimming. All members of the senior class of the Balboa high school were required to pass a rigid test, before graduation, consisting of swimming and life saving. New play sheds were added to the equipment of the Pedro Miguel and Gatun clubhouses, and one was erected near Folks River beach in New Cristobal for the children of that community; the sheds are approximately 42 by 80 feet. The average daily attendance of children 3 to 5 years of age on the five playgrounds was 164, and of children 6 years and over, 552. Decoration Day was observed on all playgrounds by appropriate patriotic exercises. A community Christmas pageant, with over 165 children and 50 adults participating, was staged on the lawn of the administration building on Christmas night by employees of this bureau.

# RECORD BUREAU.

In addition to maintaining the general files and permanent records of the Canal and railroad, this bureau has charge of the classification of records turned in by the field officers; publication of all rules and regulations, circulars, etc., documents, and publications; the custody of timekeeping records; the receipt, distribution, and dispatch of all mail for all offices of the administration building other than the accounting department; and the operation of the library system. The library has five branch libraries in the Canal Zone clubhouses. In the libraries there were 5,111 volumes received, classified, catalogued, and prepared for circulation. On June 30, 1920, there were 1,139 registered borrowers, with a circulation of 1,625 volumes per month.

# PERSONNEL BUREAU.

This bureau maintains the personal files of each gold employee, accounting for the history of service, salary status, leave of absence, transportation; organization status of the different divisions and bureaus of the Canal and railroad; and the records of all new employees requisitioned from the United States. Under the provisions of the act for the retirement of the employees in the classified civil service the bureau began the examination of personnel files as a basis for the necessary reports on employees entitled to the benefits of this act.

# PROPERTY BUREAU.

This bureau has the actual property accounting for the entire Canal and railroad organizations. Physical checks of the property are made twice annually and the accounts of responsible officials entering on leave, transferring, or resigning are checked in each instance.

# BUREAU OF PAY ROLLS.

This bureau is charged with the preparation of all pay rolls of the Canal and Panama Railroad, based on the daily time reports. Preparation of the rolls involves deductions for collections for coupon books and other charges to employees paid by pay-roll deduction. Pay receipts prepared for Canal employees totaled 46,947 for gold employees and 175,622 for silver employees.

# BUREAU OF STATISTICS.

The routine work of this bureau included the compiling of vital statistics for the health department; navigation statistics for the marine superintendent; preparation of data for wage adjustments; compilation of matter for The Panama Canal Record; investigations of cost of living; and, in addition, a special study of Canal services for official report or for replies to private inquiries.

# Division of Schools.

The net enrollment for the year was 2,004 at the white schools and 1,481 at the colored schools, a total of 3,485 as compared with 3,006 in 1919. The average daily attendance at the white schools was 1,588.5 and at the colored schools 864.9, making a total of 2,453.4 as compared with 2,178.5 for the previous year. The number of white teachers employed during the year was 74, an increase of 2 over the preceding year. There was an increase of 2 colored teachers, the number being 24. The best standards of the public schools in the United States were followed in the Canal Zone schools. Physical examinations were made in both white and colored schools of pupils and proper steps taken to remedy defects discovered. Manual training and household art classes were held at Cristobal for the white pupils of Gatun and Cristobal schools and at Balboa for the white pupils of the Pedro Miguel, Ancon, and Balboa schools. Instruction in music was continued and satisfactory progress made. The night school of Spanish was conducted at Cristobal and night

school of English, Spanish, French, shorthand, and manual training was conducted at Balboa. On July 1, 1919, there were 44 apprentices taking the apprentice courses. There were 14 new enrollments; 10 were graduated, 3 resigned, and 1 was discharged for unsatisfactory progress. At the close of the year there were 48 apprentices.

# POLICE AND FIRE DIVISION.

In addition to routine work the police division made numerous confidential investigations and reports of matters affecting the Canal and the general interests of the United States on the Isthmus. Considerable extra work was handled in the police division during the strike of the silver employees. There were 4,202 arrests during the year, of whom 4,026 were males and 176 females. A monthly average of 92.25 prisoners served sentences in the common jails. The total value of labor performed amounted to \$19,486.94. Monthly patrols of the interior sections of the Canal Zone were continued to determine if any new clearings or cultivations were made or if any new buildings were being constructed by private parties in the depopulated areas. There were 23 arrests and 2 convictions for trespassing on Canal Zone lands. Fifty-four persons were deported from the Canal Zone; of this number 49 were convicts who had completed terms of sentence in prison. Sixty-five convicts were received at the penitentiary during the year. The aggregate sentences imposed on convicts amounted to 83 years, 9 months, and 21 days. There were 51 discharges from the penitentiary on account of completed terms of imprisonment. At the close of the year 53 convicts remained in custody.

Periodical inspections were made by the fire division of all government buildings, docks, storehouses, yards, etc. Fire hose and fire extinguishers were maintained in good condition. Fifteen volunteer fire companies were maintained until March 1, 1920, when the number was increased to 22 companies. Each company is composed of a maximum of 20 men, employees of the Canal and railroad. There were 129 fires and 14 false alarms reported during the year. Eight fires occurred in property of The Panama Canal, 21 in property of the railroad, 3 in property of the United States Army, and 15 in property of private individuals and United States Shipping Board. The total losses from all fires was \$3,567,083.85, of which \$1,970,000 was a loss due to a fire on United States Shipping Board steamship Marne, \$1,502,000 to a fire on United States Shipping Board steamship Olockson, and \$47,000 to the Army storehouse at Empire. Aside from the exceptional incidents of the fires on the two United States Shipping Board steamers, fire losses on the Canal Zone were

very low.

# DIVISION OF CIVIL AFFAIRS.

Bureau of posts.—Total receipts from the postal service were \$138,391.60, an increase of \$1,764.20 above the previous year. Interest received on deposit money-order funds amounted to \$22,-141.38. Under the agreement of December 3, 1904, with the Panaman Government, 40 per cent of the face value of postage stamps sold was paid to the Panaman Government, amounting to \$33,783.97.

There were issued 125,123 money orders, including deposit orders, amounting to \$3,199,996.98, on which fees amounting to \$10,207.85 were collected. Compared with the preceding year there was a decrease of 15,495 in the number of orders issued and an increase of \$91,295.32 in the total amount. Deposit money orders issued during the year totaled \$1,143,225, and payments of deposit money orders, \$1,043,080. A total of 273,778 registered letters and parcels was handled, an increase of 10,168 above the previous year. Customs duties were paid to the Republic of Panama to the amount of \$33,452 on mail parcels for nonemployees and on dutiable articles imported by employees. A total of 107,161 sacks of transit mail from New York and New Orleans was received and dispatched, an increase of 16,070 sacks over the preceding year. Of this total 94,733 sacks originated in the United States.

Bureau of customs.—There was a marked increase in shipping at Canal ports. The total number of vessels entered was 6,023 and the total cleared 6,016, as compared with 4,604 entered and 4,590 cleared during the previous year. American vessels entered numbered 2,779 and total number of American vessels cleared was 2,778, as compared with 1,959 entered and 1,940 cleared during the preceding year.

Shipping commissioner.—The chief of division of civil affairs is also shipping commissioner, and the chief customs inspectors are deputy shipping commissioners. According to law the shipping commissioner and his deputies on the Canal Zone have the same powers as shipping commissioners in the United States ports and American consuls in foreign ports respecting American seamen. There were 4,281 seamen shipped on American vessels and 3,278 discharged, as compared with 4,182 shipped and 3,453 discharged in the preceding year. Six hundred and twenty-four American seamen were subsisted or lodged in the Canal Zone during the year; of this number 288 were returned to the United States at the expense of the appropriation for the relief of destitute American seamen, and the remainder, 336, were signed on vessels and returned to the United States without expense to the Government.

Administration of estates.—There were administered 258 estates of deceased or insane employees of the Canal and railroad, and 26 estates were in course of settlement on June 30, 1920. The amount involved in the settlements made was \$16,314.77, of which \$15,446.87 belonged to decedents' estates and \$867.97 to the estates of insane persons.

# COURTS.

In the district courts 359 cases were pending at the beginning of the year, 875 were filed, 952 were settled during the year, and 282 were pending on June 30, 1920. Of the cases pending on the first of the fiscal year 158 were civil, 119 probate, and 82 criminal. The cases filed included 157 civil, 348 probate, and 370 criminal. Those settled included 189 civil, of which 101 were decided, 83 dismissed, 4 transferred, and 1 reported off; 337 probate cases were settled. Of the 426 criminal cases settled, 51 resulted in acquittal, 253 in convictions, 67 were nol prossed, 52 dismissed, and 3 transferred. Eight hundred and seventy-nine marriage licenses were issued. Five deeds were recorded. Collections of costs, fines, forfeitures, fees, etc., in the district courts amounted to \$9,431.17.

In the magistrates' courts there were 13 civil and 4 criminal cases pending at the beginning of the year. During the year 3,744 criminal and 91 civil cases were docketed; 3,838 cases were disposed of, leaving 3 civil and 11 criminal cases pending at the close of the year. Collections from all sources in the magistrates' courts amounted to \$17,863.91.

# RELATIONS WITH PANAMA.

The executive secretary conducted the correspondence with the secretary of foreign relations of the Republic of Panama that arose in connection with matters affecting the direct relations between the Canal and the Republic of Panama.

The various acts of Congress and Executive orders affecting The Panama Canal are printed as Appendix K. All details with reference to the operation of the executive department will be found in Appen-

dix F.

# OFFICE OF THE SPECIAL ATTORNEY.

Judge Frank Feuille, as special attorney, continued to represent the Government's interests before the joint commission for adjusting land claims of private owners whose property has been taken under the provisions of the treaty with Panama for purposes of construction, operation, maintenance, sanitation, and protection of The Panama Canal. In addition to these duties, he served as counsel for the Panama Railroad Company on the Isthmus and advised the Governor on certain legal questions affecting the administration of the office.

The joint commission appointed by the President of the United States and the President of Panama, in conformity with Articles VI and XV of the Panama Canal Treaty of 1903, was dissolved on March 10, 1920, after all of the cases on the docket had been disposed of with the exception of 16 remaining unsettled. The unsettled cases involve claims arising under leases or contracts for occupancy of land in the Canal Zone made with the Panama Railroad Company. By virtue of section 2 of the sundry civil appropriation act of July 1, 1916, the Congress of the United States declared that the joint commission was without jurisdiction to adjudicate such claims, and that no part of the amounts appropriated by those acts or any other actcould be used for the payment of such claims or for the payment of salaries and expenses of the commission in adjudicating or settling such claims. In view of these positive congressional mandates, the American members of the commission declined to proceed to a hearing of the 16 claims involved. The agents of the Panama Railroad have repeatedly advised the claimants, since they originally filed their claims with the commission, that the railroad company was willing to submit the controversy to the courts of the Canal Zone, but these offers have all been refused by the claimants.

In the total of 3,600 claims filed with the commission since its organization, in 1913, the total amount of money claimed was \$21,072,235.41. Of this total number, 2,041 claims were dismissed by the commission on the ground that they had been settled directly between the claimants and agents of the United States. The aggregate demands of these 2,041 claims were \$3,718,885.50; the aggregate amount paid in their settlement was \$764,512.71. Because of a previous award having been made covering the same property, the

commission dismissed 42 claims, involving an aggregate demand of \$388,277.37. For want of jurisdiction the commission dismissed 178 claims, involving a total demand of \$1,504,821.15. There were 10 claims withdrawn upon motion of claimants, the aggregate demands being \$167,397.50. For want of merit the commission dismissed 106 claims, the aggregate demands being \$1,374,040.38. Five claims, involving an aggregate demand of \$1,798.50, were dismissed by the commission, having been found to be duplicates of prior claims. The commission defaulted 318 claims, in which the aggregate demands were \$974,062.28. Award was made by the commission in \$44 claims, in which the aggregate demands were \$6,116,682.97 and the aggregate amount awarded was \$880,534.79.

On account of disagreements the joint commission forwarded for settlement by the umpire 40 claims, in which the aggregate sum demanded was \$6,704,490.76. The amount awarded by the umpire

was \$\$60,144.15.

The various joint commissions and umpires appointed under the Canal treaty prior to December 5, 1912, made 21 awards, aggregating the sum of \$304,558. There are no data available indicating the aggregate of these 21 claims as demanded by the claimants. law department of The Panama Canal was authorized to settle land claims by direct negotiation with the claimants, on August 6, 1908, by virtue of an Executive order of the President. Since that date the law department, and afterwards the office of the special attorney, under authority of the act of Congress of April 7, 1914, have settled directly with the claimants 5,599 claims for damages to land and improvements taken over by the Government for Canal and railroad purposes. The amounts paid in settlement of these claims aggregated the sum of \$1,403,378.86, including the sum of \$764,512.71 paid as direct settlement of 2,041 claims filed with the joint commission and afterwards dismissed by the commission because of such settlements. Some settlements for improvements destroyed were made by the Canal and railroad organizations prior to August 6, 1908, the amounts involved not being available in the records.

The total amounts paid for land and improvement claims under awards of all of the commissions and umpires appointed under the Canal treaty, and under direct settlements made with the claimants since August 6, 1908, aggregate a grand total of \$3,448,645.80. Forty-five land improvement claims were settled directly with claimants during the fiscal year 1920, aggregating the sum of \$33,-238.96. At the beginning of the year there were pending before the joint commission 94 claims, involving an aggregate amount of \$2,466,869.81. There were pending on that date before the umpire 13 claims, the aggregate demands being \$3,695,796.56. No new

claims were filed during the year.

The joint commission certified to the umpire for his decision 7 claims, the total amount demanded being \$686,516.67. The umpire disposed of a total of 20 claims during the year, wherein the aggregate demands were \$4,379,313.23 and the aggregate award was \$495,776.70. Three of the claims, in which the demand totaled \$253,600, were dismissed by the umpire. During the year the joint commission disposed of 71 claims—7 by awards, 1 by dismissal on claimant's motion, 17 because of lack of jurisdiction, 22 on presentation of evidence that payments were made on direct settlement, 5 on account

of previous award having been made for the same property, 9 were dismissed because of lack of merit, and 10 were dismissed under the

commission's rule of default.

On June 30, 1920, there were 58 lot licenses in effect on the Canal Zone, issued by the land agent on behalf of The Panama Canal; of this number, 7 were issued during the fiscal year. The revenue collected on these licenses for the year aggregated \$16,290.02.

For further details see Appendix H.

#### HEALTH DEPARTMENT.

This department remained under the jurisdiction of Col. H. C. Fisher, United States Army, as chief health officer. The general health conditions of the Canal Zone and of the cities of Panama and Colon remained normal, except for the prevalence of an influenza epidemic which began early in the month of March, 1920. From this disease there were 601 cases and 50 deaths in March, 314 cases and 52 deaths in April, 40 cases and 24 deaths in May, and 138 cases and 7 deaths in June. The epidemic originated in the city of Colon, but later cases were reported from all parts of the Canal Zone and the city of Panama and its suburbs. Effective measures were taken to control the epidemic so far as possible. Schools, moving picture shows, and other places of assembly were closed for a period of two weeks. On March 21, 1920, a ship from Ecuador was received at Balboa quarantine with six cases of influenza. On June 23 a ship from Peru arrived with 23 cases. In both instances the local passengers were detained in quarantine three days and the crew and other agents and employees were observed and temperatures taken for three days; no new cases developed from these sources.

There were 28 cases of smallpox reported during the year, with no deaths. Among residents of the cities of Panama and Colon a systematic vaccination was continued. On June 30, 1920, there were two cases in the hospital. One case of yellow fever was reported to the Balboa quarantine on August 10, 1919, from a ship arriving from Corinto, Nicaragua. There were no secondary cases following this case, and no cases of yellow fever originated on the Isthmus; 11 cases of leprosy were admitted to the leper asylum during the year.

With the cooperation of the chief health officer an antivenereal disease campaign has been conducted along the lines adopted in the United States by the Commission on Training Camp Activities of the War and Navy Departments. A free venereal disease clinic, where both curative and prophylactic treatments are given, was established in Santo Tomas Hospital, in Panama, on August 19, 1919, and one at Colon on March 1, 1920, maintained by the American National Red Cross. An educational campaign has been conducted; pamphlets have been distributed in English and Spanish, and moving pictures dealing with this subject shown. A notice of warning against all prostitutes was handed by the quarantine officers to the crews of all incoming vessels. On account of the inevitable lack of authority to legislate in foreign territory, the recommendations and suggestions of the chief health officer and his assistants have been of an advisory character only, so far as the cities of Panama and Colon are concerned.

In the population of the Canal Zone and vicinity the incidence of malaria was less than in the preceding year, the number of cases reported having been 1,370 for 1920, as compared with 2,224 in 1919. The annual rate per thousand for employees living in the sanitated areas of the Canal Zone and the two terminal cities was 14.64 in 1920, as compared with 10.81 in 1919. In the unsanitated districts, camps, and plantations within the Canal Zone the rate per thousand was 169.13 in 1920, as compared with 240.53 in 1919.

Among the employees of the Canal and Panama Railroad the death rate per thousand for 1920 from all causes was 9.49, as compared with 8.43 in 1919. The death rate from tuberculosis was 1.43, as compared with 1.49 in 1919. The five diseases causing the highest number of deaths, with the rate, are as follows: Tuberculosis, 1.43; pneumonia, 1.15; influenza, 0.97; chronic nephritis, 0.87; organic

diseases of the heart 0.46.

In the average population of the Canal Zone of 30,954, including the military population, there were 253 deaths, 219 of which were from disease, with a rate of 7.08 per thousand for disease alone, as

compared with 9.4 in 1919.

In the city of Panama there were 1.278 deaths, of which 1,234 were from disease, giving a rate of 20.11 for disease alone, as compared with 21.85 for the preceding year, on the basis of an average population of 61,369. In Panama City the death rate from tuberculosis was 3.8 per thousand, as compared with 4.3 for the year 1919. Of the total deaths reported in the city of Panama 42 per cent occurred among children under 5 years of age.

In the city of Colon there were 567 deaths, of which 527 were from disease, giving a death rate of 20.21 from disease alone, as compared with 23.28 the preceding year, on the basis of an average population

of 26,078.

# DIVISION OF HOSPITALS.

Ancon Hospital.—At the surgical clinic there were performed 1,944 major operations; 3,134 cases visited the out-patient department; 314 obstetrical cases were delivered. In the medical clinic 2,611 cases were treated in the out-patient department. In the eye and ear clinic 7,443 cases were examined in the out-patient department. A total of 2,606 prescriptions were written, 967 refractions were made, and 976 operations performed. In the X-ray clinic a total of 3,333 cases were handled; 7,197 plates and 1,708 dental films were taken. In the steward's department there were 164,218 rations issued to Ancon hospital patients and 92,790 rations to hospital employees, making a total of 257,008 rations issued. A total of 10,393 patients were admitted. At the board of health laboratory the work included examinations of milk, beverages, drugs, canned foods, and miscellaneous supplies, as well as clinical examinations requiring quantitative determination. The entomological department of this laboratory covered the study of insects infesting food and stored products, household insects, vegetables and truck crop insects, and the more important pests of tropical fruit trees. At the request of the United States Department of Agriculture the laboratory facilities were made available to an entomological inspector of the Federal Horticultural Board, who was assisted by the chief of laboratory. The principal object in view was to ascertain what dangerous pests occur in the Canal Zone which might, on account of the concentration

of traffic and commerce from all parts of the world, be potential menaces to the continental United States.

Corozal Hospital.—On June 30, 1920, there were 344 patients and 26 chronic cripples at the Corozal Hospital. In the treatment of the insane the occupational department was expanded. The officers of the Mental Hygiene Society in New York sent down free of charge an industrial instructor, who remained here three months and instructed the chief nurse in the essentials of an industrial department. The occupational treatments proved to be beneficial to the class of insane patients at this hospital. Most of the articles made by the patients, including rugs, hats, handbags, wood carving, etc., have found ready sale. Most of the male patients are cultivating gardens attached to the hospital plant. From appropriations made by Congress a new hospital ward was erected, with accommodations for 80 patients, and was occupied in January, 1920. It has been possible to isolate all tubercular insane patients. The grounds within the hospital have been kept in order by patients' help. The dairy maintained at this hospital was continued and milk supplied, under prescription, to the patients in Ancon Hospital. On June 30, 1920, the herd consisted of 3 bulls, 74 cows, and 38 calves. At the piggery there were on hand at the end of the year 27 hogs and 120 pigs. Most of the pigs when ready for use are sold to the supply department. The number of cripples remaining at the hospital on June 30, 1920, was 4 white and 27 black, a reduction of 21 during the year.

Colon Hospital.—Emergency cases are admitted to the Colon Hospital; others, both medical and surgical, are transferred to the Ancon or Santo Tomas Hospitals. Efforts were made to keep the number of patients in Colon Hospital to 50 or below. The number of admissions at this hospital during the year were as follows: Employees, 305; Army and Navy, 88; Panama pay patients, 5; other pay patients, 427; charity patients, 62, making a total of 887. Λ total of 403 surgical operations were performed at this hospital.

Santo Tomas Hospital.—This hospital, located in the city of Panama, is owned by the Panaman Government, but is operated by agreement under the general supervision of the chief health officer of the Canal. The superintendent, two physicians, and three nurses are employees of the Canal. With the cooperation of the Panaman Government a practical system of bookkeeping and property accounting has been installed, and a systematic survey of the financial condition was made. All of the debts of the institution have been paid. From revenues pertaining to the Republic of Panama, derived from liquor taxes and the national lottery, plans have been made and approved and construction commenced on an entirely new hospital plant. The site of the new plant is on a high point facing the Pacific Ocean, in the suburbs of the city of Panama. The estimated cost of the total project is \$1,000,000. The total capacity of the hospital will be 600 patients under normal conditions, with facilities for emergency expansion to 900 patients. The following equipment and facilities are being installed at the institution: Sound-proof walls, silent bell call system; floor lights and inclosed clothes chutes; an X-ray suite; library and class room; venereal and dental clinics. A radium department will be a feature of the surgical suite, and hydro and electric therapeutic installations will also be added to the institution.

Palo Seco Leper Asylum.—The number of cases in this institution at the close of the year was 74. There were 11 admissions and 39 were discharged—2 from Gatun, 1 from Empire, 4 from Panama, and 1 from Juan Diaz, in the Republic of Panama. Three deaths occurred during the year. Two patients were paroled who were afflicted with a noninfectious type of leprosy; they will report to the health department once every six months for examination and report as to condition. One patient was deported to his home in Martinique and 1 to Barbados.

# SANITATION.

The principal work of the division of sanitation consists in antimosquito work. The four sanitary districts remain as described in last year's report except that the former Army post at Las Cascadas, on the west side of the Canal, is now sanitated by our forces as this town was turned over to the Canal and opened by the supply department for silver employees of the Canal. On account of an outbreak of malaria in Colon and Mount Hope and vicinity, drainage ditches extending to sea level were excavated in swamps on Telfer's Island and in the vicinity of Mount Hope. All swampy territory within a mile of the dry dock was thus drained. Drainage work was also done in the vicinity of Gatun, in a swamp north of Gatun dam and west of the old French canal. Near Pedro Miguel tile drainage was installed in the fortifications clearings formerly used as cattle pastures. In the Ancon-Corozal district the outlying areas requiring maintenance by oiling and other temporary measures have been improved by the construction of open ditches lined with half-round concrete drains. No extensive construction was required in the Balboa district. Constant vigilance was exercised to reduce so far as possible the number of rats in the vicinity of dwellings, storehouses and steamship piers. Systematic rat destruction was carried on in the terminal cities by poison and traps, and examinations were made by the board of health laboratory in all cases to determine if any plague infection was present. Because of the prevalence of plague in both North and Central American ports, the destruction of rats is an important protective measure in the Canal Zone against the importation and spread of plague.

# QUARANTINE DIVISION.

Inspection trips were made by the chief quarantine officer and by the quarantine officer at Cristobal to various ports in Central and South America in order to discover the actual conditions as to the incidence of yellow fever and plague at those ports. As a result of these inspections the 6-day quarantine was lifted against the Atlantic ports of Colombia. Fumigation of all vessels arriving from the west coast of South America, which discharged cargo at a Canal Zone port, was continued, and these vessels are fumigated, empty, once every three months for the destruction of rats. On account of the unsatisfactory plague situation at Paita, Peru, the separate fumigation on the arrival at Cristobal of all cargo lifted at this port was instituted as a matter of precaution. Steamship companies have given hearty cooperation in these protective measures. Quarantine

inspection of incoming vessels from "clean" ports, at the Balboa entrance up to 10 o'clock at night, was started on February 16, 1920. Up to June 30, 1920, only 9 ships had availed themselves of this privilege. At Cristobal 203 ships were inspected at night. The quarantine service is charged with the enforcement of immigration regulations of the Canal Zone and Republic of Panama, aided in cases of American seamen and Chinese by the customs bureau.

For further details see report of chief health officer, Appendix I.

#### WASHINGTON OFFICE.

This office remained in charge of Mr. A. L. Flint, as general purchasing officer and chief of office. The work is divided into three general subdivisions; Administrative office, including the appointment division and the correspondence and record division; office of the assistant auditor; and the purchasing department. The work of the appointment division was affected by unusual conditions during the year, including the shortage of skilled and technical men in the United States available for appointment on the Canal; interruption of sailing schedules to the Isthmus during the summer and autumn of 1919, and the loss during the year of most of the experienced

clerks engaged in this work.

On May 5, 1920, a requisition was received from the Isthmus for 130 building tradesmen. Forty-two per cent of those tendered appointments during the year failed to accept. Seventeen hundred and ninety-two persons were tendered appointments in the grades above that of laborer, of which 1,032 accepted and were appointed. Four thousand five hundred and ninety-two persons, including new employees, those returning from leaves of absence, and members of employees' families, were provided with transporation from the United States to the Isthmus. In response to inquiries and applications for employment, and in the issuance of appointments, 21,435 letters were written; 7,525 telegrams were sent, and 43,222 circulars were mailed.

The increasing commercial use of the Canal since the war has developed a corresponding increase in the work of the correspondence and record division in answering inquiries and disseminating general

information and literature regarding the Canal.

In the assistant auditor's office 13,635 disbursement vouchers, amounting to \$8,180,673.25, and 225 collection vouchers, amounting to \$1,678,875.44 were prepared. An administrative examination was given 1,661 settlements by transfer of appropriations, aggregating \$2,106,758.79. Reports were made on 31 claims submitted to the auditor for the War Department. One hundred and twenty-one contracts were prepared, amounting to \$5,130,714.76. The assistant auditor, as legal adviser in the United States for The Panama Canal, has continued to render assistance to the Department of Justice in connection with the preparation for trial, and at the trial in the courts, of all cases in connection with actions brought by or against The Panama Canal. During the year suits have been pending against The Panama Canal involving claims amounting to \$19,339.48. All cases were settled in favor of the Government except one, which is still pending in the district court of the seventh district, New York.

The purchasing department issued 8,367 orders for material and supplies, an increase of 898 as compared with the fiscal year of 1919. The total value of the orders placed was \$9,133,069.94, as compared with \$6,764,278.82 for the fiscal year 1919. Sales in the United States of scrap and obsolete Canal material handled by the purchasing department during the year amounted to \$678,402.82, based on 58 sale orders, as compared with \$423,194.90, based on 70 sale orders during the preceding year.

The work of inspection of material purchased has been facilitated as heretofore by assistance of the field officers of the Corps of Engineers, United States Army, in charge of districts, by the Bureau of Standards, Bureau of Mines, Bureau of Chemistry of the Department of Agriculture, and the Medical Department, Ordnance Department, Signal Corps, and Quartermaster Corps of the United States Army.

The principal purchases were made by the Washington office, although offices in charge of assistant purchasing agents have been continued at New York, New Orleans, and San Francisco. These offices act as receiving and forwarding agents for such material as has been purchased in their respective ports. A small force of employees has been continued in the medical branch, Zone Supply Office, United States Army, to assist the officers in charge in making purchases of medical and hospital supplies on the Isthmus, most of which have been purchased through that branch.

For further details of the operations of this office, see report of

general purchasing officer and chief of office, Appendix J.

Respectfully submitted.

Chester Harding, Governor, The Panama Canal.

Hon. Newton D. Baker, Secretary of War, Washington, D. C.

# APPENDIX A.

# REPORT OF THE ENGINEER OF MAINTENANCE.

THE PANAMA CANAL,
OFFICE OF THE ENGINEER OF MAINTENANCE,
Balboa Heights, Canal Zone, July 20, 1920.

Sir: The following is a report of the work done under the jurisdiction of this office during the fiscal year ending June 30, 1920:

### ORGANIZATION.

The duties of the engineer of maintenance were increased during the year by the issuance of your order dated August 15, 1919, instructing me to have supervision over the work of the building division. During the year the personnel in charge of the various divisions and sections reporting to this office was as follows:

Building division.—Mr. Hartley Rowe resigned, effective August 15, 1919, and Mr. T. C. Morris was appointed resident engineer in

charge of the building division.

Electrical division.—Mr. Walter L. Hersh, electrical engineer.

Locks division.—Mr. E. D. Stillwell, superintendent of the Atlantic locks.

Mr. W. R. Holloway, superintendent of the Pacific locks. Municipal division.—Mr. D. E. Wright, municipal engineer.

Section of meteorology and hydrography.—Mr. R. Z. Kirkpatrick, chief hydrographer.

Section of office engineer.—Mr. C. J. Embree, office engineer.

Dredging division.—Mr. J. M. Pratt, superintendent.
Section of surveys.—Mr. O. E. Malsbury, assistant engineer.

Maintenance of Gatun dam and back fills.—Mr. J. J. Walsh, general foreman.

# Locks Division.

### OPERATION.

On July 25 the largest American ships to transit the Canal went through Gatun locks going south. They were the dreadnaughts New Mexico and Mississippi, sister ships of 32,000 tons each, length 624 feet and beam 97 feet 4½ inches.

The largest ship to transit the Canal to date is the British battle cruiser *Renown*, which passed through the Canal on March 30, 1920, with the Prince of Wales. She has a length of 795 feet and a displace-

ment of 33,379 tons, her beam being  $91\frac{1}{2}$  feet.

39

#### LOCKAGES.

The following table gives the record of lockage operations for the past fiscal year:

	Gatun.	Pedro Miguel.	Miraflores.
Lockages.			
Commercial lockages: Vessels Panama Railroad vessels Launches	2,290 14 6	2,360 17 5	2,289 15 4
Total commercial lockages	2,310	2,382	2,308
Noncommercial lockages: Canal	77	292	243
U. S. Navy and U. S. Army	172	. 185	180
Total noncommercial lockages	249	477	423
Commercial lockages in which noncommercial vessels were included.	175	234	262
Summary: Commercial lockages Noncommercial lockages	2,310 249	2,382 477	2,308 423
Total lockages	2,559	2,859	2,731
Vesscls.			
Commercial vessels Commercial launehes	2,498 36	2,507 $20$	2,508 20
Total commercial vessels and launches	2,534	2, 527	2,528
Noncommercial: Vessels (canal). Barges (canal). Tugs (canal). Launches (canal). Noncommercial U. S. Army and U. S. Navy:	1 93 115 56	93 123 306 129	85 108 287 126
Noncommercial U. S. Army and U. S. Navy: Vessels Barges. Tugs. Launches.	258 16 43 32	284 9 27 32	283 11 27 51
Total noncommercial vessels, etc.	614	10,003	978
, and the second se		,500	
Summary: Commercial vessels Noncommercial vessels	2,534 614	2,527 1,003	2,528 978
Total vessels	3,148	3,530	3,506

The average number of lockages per month for Gatun was 213.25 as compared with  $180\frac{1}{12}$  for last year. The average number of lockages for the Pacific side was 238.25 as compared with  $203\frac{2}{3}$  last year The month having the maximum number of lockages and vessels was December, 1919, when the record was as follows:

	Atlantic locks.	Pacific locks.
Commercial lockages	252 16	259 32
Total number of lockages	268	291
Commercial vessels	269 43	266 75
Total number of vessels	312	341

#### WATER CONSUMPTION-GATUN LAKE.

Complete data regarding the hydrography of Gatun Lake for the calendar year are included in the report of the chief hydrographer given hereinafter. The following table has been compiled to give complete information regarding the average monthly supply and demand of water for the past fiscal year:

Average	quantity	of water	per	month.
---------	----------	----------	-----	--------

	Cubic feet.	Percentage.	Percentage of total.
Water lost:			
Loss in storage, Gatun Lake	879, 790, 000	10.4786	6.488
By evaporation	1,994,150,000	23.7511	14.7062
By wastage over Gatun spillway	5,433,670,000	64.7172	40.0717
By leakage, Gatun spillway	9,500,000	.1132	.070
By transfer to Miraflores Lake.	31,700,000	.3776	.233
By leakage, all locks	47, 210, 000	. 5623	.348
Total water lost	8,396,020,000	100.0000	61.918
Water used:			
For pumping	74,650,000	1.4456	. 550
For lockages, Atlantic	857, 900, 000	16.6135	6,326
For lockages, Pacific	745, 310, 000	14.4332	5.496
For hydroelectric station	3,486,000,000	67.5077	25.708
Total water used	5,163,860,000	100.0000	38.081
Total water lost and used	13,559,880,000		100.000

The maximum lake elevation for the year was 87.16 feet in December, the average 84.85 feet, and the minimum elevation of Gatun Lake was 81.65 feet in May of this year. As detailed in the report of the chief hydrographer, water was conserved in Gatun Lake by a partial relief of the hydroelectric station through operation of the Miraflores steam station. The controlling reason for this was the acute situation at Cucaracha slide from February 22 to early in June, during which time, as was anticipated, the gains in levels effected by this saving of water facilitated the transit of some of the larger ships.

#### PAINTING AND MAINTENANCE.

In line with the adopted policy of maintenance of underwater structures by unwatering at three-year intervals, maintenance at Miraflores locks started with the installation of the floating caisson in the east chamber on December 12, the work being completed January 31. The west chamber was unwatered February 2 and the work completed February 7. Work was started at Pedro Miguel west chamber February 12 and completed March 27. The east chamber at Pedro Miguel was not overhauled because of the congested traffic conditions in the short stretch of the Canal north of Pedro Miguel due to the emergency brought about by conditions at Cucaracha slide.

During the maintenance work it was found that the teredo has attacked the greenheart sill timbers of the gates. New sills were installed on gates 120, 121, 123, 124, 108, 109, and 113 at Miraflores locks. The teredo was also found attacking the greenheart sills in the west chamber at Pedro Miguel locks, where the fresh water of Gatun Lake passes into Miraflores Lake, the latter 54\frac{3}{3} feet above sea level.

#### TOWING LOCOMOTIVES.

The towing locomotives have continued to render excellent service throughout the year. All locomotives were thoroughly overhauled and painted, the slip drums being tested at varying intervals, but a test is made at least once every two weeks. Only one accident occurred during the year when one of the machines went down the incline under the emergency dam at Pedro Miguel and collided with another machine, injuring one cab.

### TRANSFORMER ROOMS.

In the transformer rooms all oil switches are tripped at least once a week for test.

The oil switch banks have been thoroughly overhauled, the relays checked, the busses retaped where necessary, and the oil in oil switches and transformers has been filtered. Steps have been taken to install disconnective switches on all towing track feeders at Gatun to assist in operation.

# MITER GATES.

All miter gates are sounded each week and necessary repairs made. The control piping leading through to the air compartment has been rusting badly and orders have been issued to remove all miter gates sump pumps and their respective control piping.

We have continued to maintain the bitumastic enamel on the interior and exterior of the lock gates, the American Bitumastic Enamels Co. guarantee having expired at all locks except Miraflores, where the painting of the exterior of the gates is still under guarantee.

# RISING STEM VALVES.

During the maintenance of Miraflores and Pedro Miguel locks the rising stem valves were removed and completely overhauled. The side seal strips of guayacon were found badly eaten by teredos and the bottom seals of greenheart were in the same condition.

The wearing pads and roller trains of all valves were found to be in bad condition and in many cases will have to be replaced on the next overhauling. In some cases the bronze nuts on the rising stems have worn down to a point where they sheared off in service; the depth of the sheared thread on one set was found to be about one-sixteenth inch at the base, the original thickness being one-half inch.

### CYLINDRICAL VALVES.

All leather seals on the cylindrical valves of the Pacific locks are being removed and replaced with rubber. The balance of the valves have been maintained in fair condition by the bituminous enamel applied during the last maintenance period.

#### CULVERT SCREENS.

When the maintenance work at Miraflores locks was started it was found that the intake screen on valve No. 406 had passed through the culvert and was found on the caisson seat at the lower end of the

locks. The culvert and valves were examined and no apparent damage was done by the screen in its travel through the culvert. Several other screens were found so badly bent that they could not be lifted through the bulkhead slots, but had to be pulled out through the end of the culvert.

#### EMERGENCY DAM.

The usual maintenance of the emergency dams has been carried on, the dams at Gatun being repainted in March. We have continued to operate each pair of dams at all locks once each month, one dam being operated at night and one in the daytime. Two quadrants were found to have settled, the east one at Miraffores and the west one at Pedro Miguel. As the quadrants were found to be as much as 1½ inches out in places, it was necessary to take up all rack castings, pull the foundation bolts, and reset the entire set of quadrant castings of the dams mentioned.

#### FENDERS.

The wooden fenders installed along the approach walls of all locks have begun to deteriorate due to dry rot, they are being replaced at present with native hardwood almendra. The marine division considered it necessary to install a third and lower set of fender timbers at lower Miraflores locks to take care of extreme low tide conditions. The new fenders were put in by the building division, the work being completed November 7, 1919.

#### TRANSPORTATION.

A 1-ton Ford truck has been added to the equipment of the Pacific locks and will be used to handle supplies from the storehouse as well as carrying men to Miraflores locks when the launch is out of commission. A new railroad speeder has just been delivered and will be used for handling heavy material between Corozal storehouse and Miraflores locks.

Following are extracts from reports of the lock superintendents, covering details of operation and maintenance of the locks.

## Pacific Locks.

#### ORGANIZATION AND PERSONNEL.

There were few changes in the personnel, but the general organization remained the same as throughout the previous year with the exception of the addition of two supervisors and additions in some of the minor positions, all of which are covered below.

Mr. W. R. Holloway continued as superintendent throughout the year, with Mr. J. C. Myrick as assisant superintendent. Mr. D. H. Moore was promoted from assistant mechanical supervisor to the newly authorized position of mechanical supervisor, and Mr. Oliver Bullock was promoted from assistant electrical supervisor to the newly authorized position of electrical supervisor, both promotions being made effective May 16, 1920. Mr. R. S. Mills and Mr. A. E. Meigs continued in the other two positions of electrical supervisor and mechanical supervisor, respectively, thorughout the

Due to the increase in traffic it was found necessary to increase the gold organization by two control house operators—one each for Pedro Miguel and Miraflores locks. The

gold organization was also increased by the addition of one utility foreman.

Approximately 47 per cent of the silver force joined the strikers in the strike that commenced on February 24, 1920. Twenty-six per cent of the strikers returned to work, and by taking on new men the silver force was back to normal in one month. There was no delay to shipping on account of the strike.

#### OPERATION.

Operations were continued throughout the year on a two-shift basis, covering a period from 7 a. m. to 6 p. m., at Pedro Miguel locks and from 7 a. m. to 8.30 p. m., at Miraflores locks. It has been found necessary at times to hold the men beyond the regular working day, but the above hours take care of traffic under normal conditions.

Tabulations are attached showing lockages by months for both Pedro Miguel and Miraflores locks, and a tabulation is also attached showing the total lockages for the year. There was an increase in lockages of 16 per cent at Pedro Miguel and 17 per

cent at Miraflores locks over the number for the last fiscal year.

There were no delays to traffic due to failure of the operating machinery.

Practice operations of the emergency dams were made monthly, but no emergency

operations were necessary.

The spillway at Miraflores was operated to maintain Miraflores Lake at the proper elevation, which is 54 feet above sea level.

#### PAINT MACHINE.

The paint machine was operated throughout the year, approximately 3,000 gallons of paint being manufactured for the Atlantic and Pacific locks.

#### LAUNCHES AND BOATS.

The launches Mary S and Dora V were operated on Miraflores Lake for transporting men and material back and forth between Pedro Miguel and Miraflores locks. The launch Mary S was given a complete overhauling during the year.

Two round-bottom pilot boats were made during the year, this work being done by

the lock forces.

#### COROZAL STORE.

The storehouse was operated at Corozal throughout the year in connection with the storing and issuing of spare parts for the Atlantic and Pacific locks.

#### MISCELLANEOUS.

A Ford truck was secured for service in connection with handling material and supplies for the locks, and a motor car was also secured for operation on the branch

line between Corozal and Miraflores locks.

Towing locomotive No. 667 was damaged in a collision with locomotive No. 670 at Pedro Miguel locks. It was necessary to install a new cab on locomotive No. 667 and also to install new panels and controller. All work was done by the lock forces with the exception of the building of the cab, which work was done by the mechanical division at Balboa shops.

Low-tide fenders were installed on both sides of the south approach wall at Miraflores locks, extending from the chains to the end of the wall. The construction of

these fenders consists of a single row of 12 by 12 inch timbers, 7 feet below the lower section of the original fenders. This work was done by the building division.

Work was started by the lock forces installing a single row of fenders from the chains to the outer gates at both ends of Pedro Miguel and Miraflores locks, on the center walls. This work has been completed at the north end of Pedro Miguel locks.

Inspection of the emergency dam quadrants showed that it was necessary to adjust the quadrant of the east dam at Miraflores locks and both dams at Pedro Miguel locks.

the quadrant of the east dam at Miraflores locks and both dams at Pedro Miguel locks. All this work was completed during the year.

#### MAINTENANCE.

The floating caisson was given a complete overhauling. In connection with this

work new impellers were installed in all pumps.

The spillway caisson was also given an overhauling. It was necessary to renew the bottom sill in its entirety, as well as to install a new roof. The caisson was also coated with bitumastic enamel.

The fender timbers at both sets of locks were inspected and renewed where necessary.

The soft nose at the north end of Pedro Miguel locks was overhauled.

The east chamber at Miraflores locks and the west chamber at Pedro Miguel locks were unwatered in order to give the submerged parts an overhauling and for touching up the bitumastic on the gates and valves. This work is covered in detail below.

#### OVERHAULING AT MIRAFLORES.

The caisson was sunk at the lower end of the east lock on December 12, 1919. The overhauling was completed and the caisson raised on January 23, 1920. The caisson was then sunk in place at the upper end of the same lock on January 26, 1920, to expose the upstream and bottom surfaces of the upper gates. This work was completed and the caisson raised on January 31. 1920. The caisson was then sunk at the upper end of the west lock on February 2, 192), to expose the upstream and bottom surfaces of the upper gates, and was floated again on the completion of this work on February 7, 1920. The general condition of the submerged parts as found on unwatering the locks and the report of maintenance work done on them are covered under each item. This work was all done by the lock forces.

Miter gates.—The bitumastic enamel on the submerged surfaces was generally spotted from rust on the exterior of the gates. On the four lower gates (Nos. 120, 121, 124, and 125) a heavy barnacle growth was found. This growth was scraped off and it was then found necessary to re-cover the entire submerged surface with new enamel. The exterior surfaces of the other gates were then gone over and all rust spots cleaned

and scraped, after which the spots were touched up with new enamel.

On the south side of the interior of gates Nos. 117, 116, 120, and 121 the heat had caused the enamel to soften and run, leaving a very thin coat. The interior surfaces of these gates were reenameled where the coat had become thin, and the remaining surfaces on the interior, as well as the interior surfaces of all other gates, were carefully gone over and rust spots cleaned and scraped, after which they were touched up with

Hermastic enamel was used on all exterior surfaces in the east lock and on the interior of gates Nos. 108, 116, 117, 120, and 124. Barber asphalt was used on all other interior surfaces. The exterior surfaces of gates Nos. 102 and 103 were patched

with Navy enamel.

The conduit and pipes for the sump pumps in the gates were found to be badly corroded in all gates, and in some practically eaten through. All sump pumps, conduit, and pipes, except sounding tubes, were removed from the gates, and the holes where the pipes had passed through the water-tight bulkheads were plugged.

Some of the greenheart seals at the bottom of the gates were damaged by the teredo The seals were repaired at nine gates, 180 linear feet of 12 inch by 12 inch almendra timber being used to replace the worm-eaten timbers that had been taken out.

Three hundred and thirty linear feet of the oak fenders at the tops of the gates that

were weakened by decay were replaced with almendra.

Rising stem valves.—The bitumastic enamel was in fair condition except on the rivet heads, butt straps and top seal castings. The four lower valves were covered with barnacles. The bottoms of the valves were badly pitted. The rivet heads were partly eaten away, weakening their tensile strength. The wearing pads on the valves were badly pitted. A number of the side seal springs were broken. The end rollers were nearly all stuck fast and had "flats" worn on them. The lignum-vitee side seal and bettern seal strips had been demaged by the torside. side seal and bottom seal strips had been damaged by the teredo. The roller trains were generally in bad condition, the rollers being pitted with rust and reduced in size. The rollers were very loose in their bearings, due to wear and corrosion, reducing the diameter of the shaft and enlarging the bearings. The fixed irons in the cul-

vert were badly corroded, especially the roller train and end roller tracks.

Twelve valves were overhauled at this time. The valve machines were dismantled and the valves lifted out for overhauling. The bottom seals of all valves were planed to a true surface. Two hundred and twenty-one defective rivets were backed out and new rivets driven. All broken side seal springs were renewed. The end rollers were turned in the lathe to eliminate "flats" and then shimmed out when mounted. The lignum-vitæ side seal and bottom seal strips were renewed with strips of the same material that had been impregnated with creosote. The roller trains had to be practically rebuilt, straight iron bars being used in place of channels for the containers. Several top seal castings and seals were repaired. The fixed irons in the culvert were scraped and cleaned, after which they were coated with hermastic enamel. The bearing surfaces were greased. The barnacles were scraped off the four lower valves and these valves were then recoated. All rivet heads and other exposed parts were patched with enamel.

Cylindrical valves.—When the chamber was unwatered it was found that the rubber seals installed on the valves on the west side had practically eliminated leakage. Rubber seals were installed on the 20 valves on the east side. The valves were found to be in very good condition except the leather seals, which were very hard and badly deteriorated. The enamel was in good condition. Necessary touching up was done. There was very little rusting or pitting on any part of the valves. few bolts, nuts, and cap screws were renewed. The stems were repacked on all the

valves on the east side.

Guard valves.—The screens for guard valves Nos. 407 and 408 were removed on December 9, 1919. It was necessary to do considerable repair work on both of them due 1) rivet heads and spacers being eaten away. The screen for No. 406 had collapsed and had been washed through the culvert, lodging on the caisson seat at the lower end of the locks. No damage was done to the valves or culvert in its passage. The screen was sent to Balboa shops and available parts were used in building a new screen.

The opening in front of valve No. 407 was not wide enough to take a bulkhead, so the valve was replaced on December 10, 1919, after having been overhauled. The side seals were overhauled, and the roller trains were in good condition and were replaced. The end rollers were overhauled, the bottom planed and the valve coated

with Navy enamel.

On valve No. 406 the bottom seal was planed, end rollers overhauled, slide seals overhauled and scraped and the valve coated with hermastic enamel. Rebuilt roller trains were installed. The valve was replaced on January 2, 1920.

Valve No. 408 was removed on January 6, 1920. The valve and roller train were rusty but not badly pitted. Rebuilt roller trains were installed. The side seals were overhauled, as well as the end rollers, and the valve was then coated with hermastic enamel. It was replaced on January 21, 1920.

The roller trains for the guard valves covered above were in very good condition. They were all rusty but were not badly pitted and the roller bearings were not badly worn. Roller trains Nos. 406 and 408 were used on the rising stem valves and rebuilt

trains installed in their place.

Bulkheads.—Bulkheads were installed in the upper end of the east culvert on December 9, 1919, and in the lower end on December 12, 1919. The bulkheads at the upper end were removed on January 23, 1920, and the lower end on January 24,

The center culvert entrance bulkheads were removed in both the upper and lower chambers and seals renewed complete, almendra being used. The enamel on these bulkheads was in very good condition and touching up only was done.

#### OVERHAULING AT PEDRO MIGUEL.

The caisson was sunk at the lower end of the west chamber at Pedro Miguel locks on February 11, 1920. It was floated again on March 25, 1920, after completion of the overhauling work in that chamber. The general condition of the submerged parts, as found on inspection after the lock was unwatered, and a report of the mainte-

nance work on them are covered under each item.

Miter gates.—The exterior surfaces of these gates had been coated with Navy enamel in the early part of 1917, and touching up only was required at this time. The exterior surfaces were in very good condition and showed no signs of deterioration except on the miter faces and at the quoins, which showed considerable corrosion and pitting. These were thoroughly cleaned and given one coat of red lead paint and a heavy coat of "Crater" compound. The bitumastic on the interior of gates Nos. 64, 65, 72, and 73 was touched up.

It was found that the teredo had been extremely active in all gate sills. The sills for gates Nos. 68 and 69 were renewed in their entirety. 25 linear feet of the sill at the quoin end of No. 72, and 12 feet each at the miter ends of Nos. 72 and 73 were renewed.

Almendra was used on all this work.

Repairs were made to the fenders at the tops of the gates, 96 linear feet of fenders

being renewed.

Rising stem vilves.—All center wall rising stem valves, with the exception of Nos. 312 and 313, and all the west side wall valves were removed for overhauling. All end rollers had to be removed, overhauled, and relined. The rivets in the valves were in good condition. A number of the side seal springs were broken, and valve No. 330 required a complete set of new springs. Some of the roller trains were worn and had to be replaced. The bottoms of the valves were planed to a true surface where necessary

Before the valves were replaced they were thoroughly cleaned and the bitumastic

gone over. Some of the valves required an entire new coat of bitumastic

'ylindrical valves.—The cylindrical valves were in good condition. The leather scals were replaced with rubber seals on all valves of the west chamber. The bitumastic on all valves of the west chamber was touched up.

Guard valves.—The screens were bent out of shape and had to be pulled through the intake openings with a towing locomotive. They were then sent to Balboa shops to be used in connection with making new screens. The guard valves were all in good condition. However, they had never been coated with bitumastic and had to be taken out for this purpose.

The roller trains for guard valves Nos. 309 and 311 were used on the rising stem valves, rebuilt trains being installed in their place.

Total.

1,307

# Pedro Miguel Locks.

#### LOCKAGES.

			DOC INT.	11101					
		Northbound.				Southbound.			
Months.	Com- mer- cial.	Army and Navy.	Canal equip- ment.	Total.	Com- mer- cial.	Army and Navy.	Canal equip- ment.	Total.	Total both ways.
July. 1919. August September. October November. December 1920.	90 99 100 123 92 115	11 2 0 1 1 1 5	14 5 11 12 5 7	115 106 111 136 98 127	68 90 76 77 87 144	43 20 6 11 10 6	20 13 18 14 16 14	131 123 100 102 113 164	246 229 211 238 211 291
January. February March April May June	119 93 95 105 117 91	2 7 2 6 3 2	9 15 9 9 9	130 115 106 120 129 103	107 84 101 107 102 100	12 11 4 4 7 9	16 9 17 13 12 15	135 104 122 124 121 124	265 219 228 244 250 227
Total	1,239	42	115	1,396	1,143	143	177	1,463	2,859
			VESSE	LS.					
1919. July August September October November. December	95 100 100 123 92 120	16 6 1 2 8 6	41 13 31 29 19 22	152 119 132 154 119 148	68 90 77 78 92 146	62 33 12 20 17 12	36 24 31 27 28 35	166 147 120 125 137 193	319 269 252 279 256 341
1920. February March April May June	126 109 112 113 120 97	5 18 7 10 6 5	22 38 23 27 24 25	153 165 142 150 150 127	116 101 127 116 105 104	27 28 15 9 15	30 24 32 22 24 24 24	173 153 174 147 144 140	326 318 316 297 2 '4 267

314

1,711

1,220

262

337

1,819

3,530

# Miraflores Locks. LOCKAGES.

	Northbound, Southbound.								
Months.	Com- mer- cial.	Army and Navy.	Canal equip- ment.	Total.	Com- mer- cial.	Army and Navy.	Canal equip- ment.	Total.	Total both ways.
July August September October November December	84 92 93 118 92 108	10 2 0 1 1 5	14 6 12 11 4 5	108 100 105 130 97 118	67 85 72 76 83 124	42 19 5 10 10 6	17 13 19 13 13 13 9	126 117 96 99 106 139	234 217 201 229 203 257
1920. January February March April May June	110 96 96 104 115 96	2 7 2 7 3 2	7 10 4 8 8 8	119 113 102 119 126 106	91 92 107 102 101 104	11 10 4 4 8 9	12 1 13 15 10	114 103 124 121 119 124	233 216 226 240 245 230
_ Total	1,204	42	97	1,343	1,104	138	146	1,388	2, 731
			VESSE	LS.			,		,
1919. July	96 100 99 123 92 120	16 6 1 2 11 6	33 12 31 30 15 26	145 118 131 155 118 152	69 90 75 78 92 146	62 33 12 20 19	33 23 31 29 24 34	164 146 118 127 135 192	309 264 249 282 253 344
1920. January. February. March. April May. June.	126 109 112 113 120 98	5 18 8 13 8 7	18 31 18 23 23 27	149 158 138 149 151 132	116 101 127 116 105 105	26 28 16 13 17 13	25 18 29 25 24 24	167 147 172 154 146 142	316 305 310 303 297 274
Total	1,308	101	287	1,696	1,220	271	319	1,810	3,506

# Pacific Locks. LOCKING OPERATIONS.

	Pedro Miguel locks.			Miraflores locks.			
	North.	South.	Total.	North.	South.	Total.	
Lockages: Commercial lockages— Vessels. Panama Railroad vessels. Launches	1,230 8 1	1,130 9 4	2,360 17 5	1,196 7 1	1,093 8 3	2,289 15 4	
Total commercial lockages	1,239	1,143	2,382	1,204	1,104	2,308	
Noncommercial lockages— Canal U. S. Navy and U. S. Army	115 42	177 143	292 185	97 42	146 138	243 180	
Total noncommercial lockages	157	320	477	139	284	423	
Commercial lockages in which non- commercial vessels were included	132	102	234	140	122	262	
Summary— Commercial lockages Noncommercial lockages	1,239 157	1,143 320	2,382 477	1, 204 139	1,104 284	2,308 423	
Total lockages	1,396	1,463	2,859	1,343	1,388	2,731	

# Pacific Locks—Continued. LOCKING OPERATIONS-Continued.

#### Pedro Miguel locks. Miraflores locks. South. Total. North. South. Total. North. Vessels: Commercial vessels....Commercial launches.... 1,298 1,297 1,210 1,210 2,507 2,508 10 20 Total commercial vessels.. 1,307 1,220 2,527 1,308 1,220 2,528 Noncommercial vessels (canal). Noncommercial barges (canal). Noncommercial tugs (canal). Noncommercial launches (canal). Noncommercial vessels (U. S. Navy 47 71 129 85 42 43 93 123 56 42 98 306 123174 297 177 67 129 66 60 126 and U. S. Army). Noncommercial barges (U. S. Navy and U. S. Army). 283 68 284 68 215 216 2 9 11 1 8 9 Noncommercial tugs (U. S. Navy and U. S. Army). Noncommercial launches (U. S. Navy 5 22 27 5 22 27 51 and U.S. Army)..... 16 16 32 26 25 978 404 599 1,003 388 590 Total noncommercial vessels... Summary-1,307 1,220 599 1,308 1,220 590 2,528 978 Commercial vessels... 2,527 1,003 Noncommercial vessels..... 388 404 1,810 Total vessels..... 3,506

Annual report of water drawn from Gatun and Miraflores Lakes for lockages and other purposes.

1,819

3,530

1,696

#### [In thousands of cubic feet.]

1,711

	1	Pedro Migue			Miraflores.			
Month.	Lockages.	Leakage.	Other purposes.	Lockages.	Leakage.	Other purposes.		
July August September October November December	787,600 722,020 633,280 748,650 704,160 1,030,990	25, 930 28, 980 29, 520 30, 500 35, 420 48, 800	13,850 3,810 27,390 39,970	707,190 652,910 607,600 704,900 629,880 769,740	13,500 14,000 15,000 15,000 15,000 15,000	8, 24 14, 01 57, 81		
1920. January. February. March April. May. June.	884, 930 620, 950 705, 760 714, 600 696, 200 635, 370	33,540 23,530 16,770 17,710 18,300 17,800	92,140 119,030 62,740 61,980 19,080	740,650 667,860 726,590 748,110 740,710 698,390	15,000 15,000 15,000 15,000 15,000 15,000	13,56 8,0' 2,6; 4,90		
Total for year	8,884,510	326,800	439, 990	8,394,530	177, 500	110,0		

#### Atlantic Locks.

#### ORGANIZATION AND PERSONNEL.

Mr. E. D. Stillwell continued as superintendent throughout the year, and Mr. H. M. Thomas as assistant superintendent. During the absence of the superintendent on 100 days' leave in the United States from May 30, 1920, his duties were assumed by the assistant superintendent.

Mr. P. R. Kiger, who was honorably discharged from the United States Army August 8, 1919, was assigned to his former position as electrical supervisor October 28, 1919. Mr. A. E. Wood, who was appointed electrical supervisor during the ab-

sence of Mr. Kiger, was demoted to assistant electrical supervisor November 4, 1919.

Mr. F. M. Easter continued as mechanical supervisor until June 24, 1920, when he was transferred to the Gatun lighthouse subdivision. This position has not been filled.

Mr. A. M. Butcher, who was honorably discharged from the United States Army October 12, 1919, and reported for duty November 20, 1919, was assigned to his former position as general operator.

The supervisory force was increased by two additional assistant supervisors, one

mechanical and one electrical, effective May 5, 1920.

The general organization remained the same as throughout the previous year, there being a few changes in the personnel of the locomotive operators to take care of resignations and transfers.

A strike was called by the silver employees on February 22, 1920, and only nine silver employees reported for duty February 23, but with the cooperation and loyal support of the gold force, lockages were carried on without any delay until March 4, 1920, by which date the majority of the silver men had returned to work.

#### OPERATION.

Practically the same system of operation continued in effect as during the previous

Delays to Canal traffic due to faulty operation or failure of operating equipment have been few and of negligible magnitude. From a total of 3,047 vessels passed through Gatun locks the total delay was 4 hours and 26 minutes.

A report of lockages by months is as follows:

	N	Northbound	1.	s	G1		
Month.	Com- mercial.	Noncom- mercial.	Total.	Com- mercial.	Noncom- mercial.	Total.	Grand total.
July	86 95 97 120 89 114	20 5 2 4 7 7	106 100 99 124 96 121	64 86 71 72 83 138	46 21 6 15 13 9	110 107 77 87 96 147	216 207 176 211 192 268
January 1920. February March April May June Total	96	10 5 7 7 7 6 3	128 98 97 103 121 94	103 89 113 98 95 94	10 12 11 4 8 11	113 101 124 102 103 105	241 199 221 205 224 199 2,559

Total amount of water used for lockage purposes, 10,293,170,000 cubic feet. Average number of lockages per day, 6.99 plus.

Average amount of water used per lockage, 4,022,340 cubic feet plus.

Average number of commercial vessels per day, 6.923.

The emergency dams were operated each month for the purpose of instructing operators. No emergency operations were necessary.

No operation of a chain fender machine due to ship striking the chain occurred

during the year.

Both lock chambers were in service during the entire year, with the exception of a few days when minor repairs and painting were being done on the gates and valves, and then at the convenience of traffic.

The battle cruiser *Renown*, with the Prince of Wales, passed through the locks, southbound, March 30, 1920. This ship has a length of 795 feet and displacement of 33,379 tons, which is greater in length and displacement than any vessel transiting the Canal to date.

#### MAINTENANCE.

All machines and equipment were maintained in good condition. A few changes of a minor nature were made in order to improve operating conditions and reduce the work of maintenance.

Emergency dams.—Both dams were painted, except gates and girders, with one

coat of linseed oil and one coat of gray paint.

A 500-watt lamp and reflector was installed on both dams for lighting inclines. Fenders.—One hundred and nine fenders of native hard wood (almendra) were installed on approach walls during the year.

Locomotives and tracks.—An 8-foot section of steel conductor rail was replaced with

copper rail on both side wall return tracks at foot of long inclines.

The steel rail was badly corroded from the salt water splashing into slots.

The conductor rails, covers, brackets and switches on towing and return tracks were overhauled and painted.

A new traction motor was installed in locomotive No. 656.

Towing track and return track rail joints were realigned and concreted in where necessary during the year.

Rising stem valves and machines.—The 12 intermediate valves and 24 roller trains

were overhauled during the year.

Guard valve motor stator No. 269 was renewed on account of short-circuited coil. New motor shaft couplings were installed on Nos. 254 and 255.

Renewed side seals on No. 249 and one seal on No. 248.

Filling plugs were installed on all dash pots.

A new removable lintle casting was installed in pit No. 243. Z bars were aligned and concreted in.

Miter gates and machines.—Sump pumps, motors and wiring were removed from all

miter gates

Heating lights were installed in all miter gate machines and hand rail motors.

Chain fender machines.—Shortened chain on No. 801, 4 links removed.

Steel chains on Nos. 800, 801, 802, and 803 were transferred to the intermediate machines Nos. 808, 809, 810, 811, as the chains on the former were worn considerably on the side of links that come in contact with the concrete at bottom of locks.

New banjo signal was installed on No. 810.

Brass plates were installed on cores of all main contactor relays to prevent them from holding closed by residual magnetism.

Lighting system.—The lighting conduit in lower cross-under tunnel was renewed and the conduit in center wall vertical shaft was taken out.

Conduit pipes were renewed and lead-covered wires pulled into lamp posts Nos. 9, 10, 31, 32, and 188.

Approximately 400 feet of the jute-covered telephone cable were replaced by lead-

covered conductor.

Miscellaneous.—Continued making up parts and assembling disconnect switches for towing track feeders. Switches have been installed in transformer rooms, 1 in No. 749, 2 in No. 746, 2 in No. 742, 2 in No. 750, and 1 in No. 752.

Terminal boards were installed on receivers of No. 7 and No. 8 miter gates and

rising stem valves Nos. 226 and 227 in the control house.

Renewed spare oil switch No. 6 in transformer room No. 752.

Made new duct line and installed 2/0-3 conductor lead-covered power cable to shop building. Old feeder No. 7526 from the west wall was pulled out for the above. Continued retaping busses and bell terminals on machine panels.

Side wall bulkheads were painted and new hard wood (almendra) sills were

Overhauled main culvert sump pump. A recess cover, seat and base with anchor bolts for base were installed in regulating valve room at north end of center wall for storage of pump.

The center wall bulkheads were dipped in crude oil and stored on platform back of the northwest side wall, lower level. A concrete vat 15 feet square by 15 inches

deep and storage platform was built for this purpose.

A short circuit switch for use in starting the air compressor or motor was made and installed. This switch short circuits the series transformer and cuts out the relays while the motor is getting up to speed.

A board showing the primary power and lighting feeders to all transformer rooms was completed and installed in the control house.

Two ventilator shafts were installed in transformer rooms Nos. 756 and 753 for ventilation of rooms and operating tunnel.

Concrete sheds were constructed over the east and west wall locomotive repair pits. The wood flooring was removed from the work shops; east, west, and center walls and concrete beams were installed.

Painting gates.—The top of all miter gates and handrails were painted during the

The north side, upper section of miter gates Nos. 9 and 10, were enameled with hermastic enamel.

Tunnel floors.—Tunnel floors were painted, in the middle and lower levels, east, west, and center walls.

# Building Division.

The details of the operations of the building division during the fiscal year are covered in the report of the resident engineer, which follows:

#### BUILDING DIVISION.

# T. C. Morris, Resident Engineer.

The following report of operations for this division for the fiscal year ended June 30, 1920, is submitted herewith.

#### ORGANIZATION.

On June 30, 1919, the subdivision of pier construction engaged in the construction of Pier No. 6 was abolished and all work of that division was placed under the supervision of Mr. J. B. Fields as superintendent of construction.

Mr. C. A. Nelson, formerly superintendent of construction of Pier No. 6, had been engaged on the construction of a pier for the Colombian Government and his resignation was submitted and accepted on September 25.

#### PERSONNEL.

Mr. H. Rowe resigned from his position as resident engineer on August 14, and the undersigned was appointed as his successor.

The building division was placed under the jurisdiction of the engineer of maintenance on that date.

Mr. S. M. Hitt continued as architect. Mr. F. W. Blackwood, assistant engineer in charge of designs, resigned on August 21 to accept a position with the Colombian Government.

Mr. A. Hall, as supervisor, was placed in charge of construction of Fort Clayton Army post, and Mr. P. J. Corrigan, as supervisor, at Fort Davis.

#### BUILDING OPERATIONS.

Work was continued on Pier No. 6; Coco Solo submarine base; naval air station,

Coco Solo; Army aviation base, France Field.

New projects started during the year were barracks, quarters, and wharf at Fort Sherman; Fort Davis and Fort Clayton Army posts; New silver townsite, Mount Hope; lighthouse at channel end of east breakwater; Colon-Cristobal incinerator plant; combined shop and storehouse, Cristobal mole; Panama Railroad stables, Colon; reconstruction of Royal Mail pier for use of Panama Railroad; concrete oil tanks; community house. National Catholic War Council: Royal Mail office building.

#### PIER NO. 6.

Construction of Pier No. 6 was completed and turned over to the receiving and

forwarding agent for use on August 27, 1919.

At the beginning of the rainy season, some complaints were received on account of leakage of the roof. Expansion and contraction of the roof, due to temperature changes, were sufficient to cause slight temperature cracks in the 4-inch roof slab. This roof consists of a reinforced concrete slab 4 inches thick, 160 feet wide, and 945 feet long. Since this pier is used for the storage of freight in transit, and any damage to goods would result in claims against the Panama Railroad, it was decided to prevent, so far as possible, all possibilities of claims resulting from wetting, and the application of a five-ply tar and gravel Barrett Specification roof was authorized. Owing to the necessity of flashing each pier supporting the cargo-handling crane rail, and also owing to the large number of skylights, this tar and gravel roofing will be rather costly per square of roof covered. It is necessary to provide copper flashing for 720 of the crane rail piers and also to build copper framework to support the 210 skylights. These skylights originally consisted of 14 by 24 inch wire ribbed glass set in a h by finch rabbet with top surface of the glass flush with the surface of the concrete slab. The estimated cost of flashing and applying the tar and gravel roof is \$26,000, or \$17 per square, and work was 50 per cent completed on July 1.

On the morning of March 6, 1920, an explosion occurred on the steamship Marne, which was moored along the north side of the pier. This explosion resulted in the blowing in of 6 doors, 3 louvers, and 11 windows on the north side, and the vacuum caused by the explosion pulled in 6 doors on the south side of the pier. Several pieces of débris were thrown in the air, some of which fell on the roof slab. One piece, consisting of a ventilator funnel and the gearing for operating same—a total

weight of 800 pounds-fell astride one of the longitudinal reinforced concrete trusses and broke holes in the roof slab on both sides of the truss. A careful inspection showed no damage to the truss.

#### NAVAL SUBMARINE BASE AND NAVAL AIR STATION.

Work was continued on these projects in accordance with original plans and subsequent request of the Navy Department. The total expenditure during the fiscal year for the submarine base was \$147,317, and for the naval air station \$91,919.

#### ARMY AVIATION BASE, FRANCE FIELD.

All work was completed on the officers' quarters and barracks, as covered by the \$335,400 appropriation, and additional work as requested by the Army, consisting principally of the erection of one steel hangar, 110-foot span by 200 feet long, and one steel hangar 66-foot span by 140 feet long. The total expenditure at this base during the year was \$66,954.

#### BARRACKS, QUARTERS, AND WHARF, FORT SHERMAN.

New work authorized under the \$140,000 appropriation for barracks and quarters was completed. This work consisted of the construction of two type-20 staff quarters, two type EE-2 officers' quarters, two 150-men barracks, including exterior electrical work and municipal work. The total expenditure on this project was \$125,715.10.

The construction of the wharf authorized under the \$35,000 appropriation was

completed at a cost of \$25,501.08.

#### FORT DAVIS AND FORT CLAYTON ARMY POSTS.

The Army building program for the fiscal year 1919-20 provided for the construction of quarters and barracks to accommodate one regiment of Infantry at Fort Clayton, Miraflores dump, and one regiment of Infantry at Fort Davis, New Gatun.

A general description of the buildings constructed was given in the last annual report and all buildings were constructed in accordance with the specifications as

On March 28, 1919, the Governor of The Panama Canal advised the chief of office

as follows with reference to the construction of these two Army posts:
"Canal has organization and equipment to commence work within two weeks after location is approved and can carry out project by July 1, 1920."

This allowed a 15-month period for construction.

Funds were finally allotted to The Panama Canal on April 23 and the project was

definitely approved on May 19. Work was started at Miraflores on May 20.

The total amount appropriated for Fort Davis and Fort Clayton projects was \$4,986,849, of which amount the building division was allotted \$2,851,600, the electrical division \$212,000, and the municipal division \$842,000, leaving an unexpended

balance of \$81,649.

A clause in the appropriation act requiring the Governor of The Panama Canal topurchase needed materials, supplies, and equipment from various surplus stores: of the War Department, so far as available, resulted in considerable delay in de-livery of material. Specific instances of this are shown below. Requisitions for these materials were forwarded to the United States on June 23, 1919. It was then necessary for the general purchasing officer in Washington to communicate with the various surplus stores of the construction division of the Army in an attempt to purchase the needed material from these stores. In some instances, supplies were actually contracted for on the assumption that materials were available, but when actual shipment of material was to begin, none could be found. It was then necessary to cancel the order, advertise for purchase from commercial firms, and award bids. The tabulation below indicates some of the difficulties:

Commodity.	Requisition forwarded.	Delivery promised.	First shipment received.
Roof tile. Hardware. Plumbing fixtures. Plumbing fittings Scullery sinks. Millwork. Lumber.	do	Nov. 6, 1919 Oct. 5, 1919 Nov. 1, 1919 Nov. 3, 1919	Nov. 17, 1919 Oct. 21, 1919 Dec. 18, 1919 July 10, 1920

Similar difficulties were also encountered on requisitions for skilled mechanics. Of 15 carpenters requisitioned for on the 1st of May, final arrival was not effected until September 5. Of 31 carpenters requisitioned for on August 12, final arrival was accomplished on December 2, and of 34 carpenters requisitioned for on May 4, final arrival was effected on June 26. The same difficulty was experienced with plasterers, plumbers, painters, bricklayers, and sheet-metal workers. Some of these delays in procuring men were due to the fact that the authorized rates of pay for skilled mechanics in the building trades at times were as much as five months in arrears of base rates in the States. For instance, the rates of pay effective on October 1, 1919, were not authorized until February 5, 1920, and the rates of pay effective February 1, 1920, were authorized on June 10, 1920.

COSTS.

Unprecedented advances have occurred during the past fiscal year in the prices of both materials and labor. The following table shows the rates paid for skilled mechanics at the time estimates for these projects were prepared, which was June 25, 1917, the rates of pay when final plans of construction were made, on June 1, 1919, and the rates of pay in effect on June 1, 1920:

# Journeymen's rates.

Craft.	Estimate prepared June 25, 1917.	Plans made for eon- struction June 1, 1919.	In effect June 1, 1920.
Bricklayers. Plasterers. Plumbers. Carpenters. Roofers. Painters. Metal lathers.	\$0.88 .86 .84 .74 .74 .71	\$1.09 1.09 1.04 .95 1.03 .91 .95	\$1.34 1.35 1.30 1.22 1.03 1.19

The actual increase in cost due to these increases in gold journeymen's rates over the rates in effect on July 1, 1919, are shown for the various crafts in the accompanying tables (Table No. 1 for Fort Clayton and Table No. 2 for Fort Davis), and the increases due to advances in rates for silver employees are shown on Table No. 3. The total amounts are as follows:

Fort Clayton: GoldSilver	\$49,632.22 25,079.89	Fort Davis: Gold Silver	\$57,519.20 25,755.40
Total	74, 712, 11	Total	83,274.60

The increased costs of two of the principal commodities, lumber and roof tile, are shown in the table below. These increases are based on storehouse prices of July 1, 1919.

	Fort Clayton.		Fort Davis.	
Commodity.	Amount.	Per cent increase.	Amount.	Per cent inerease.
Lumber	\$27,434 26,665	18.3 45.6	\$38,985 26,665	25. 9 45. 6

Total value of material used on these projects during the year was \$630,467 at Fort Clayton and \$632,831 at Fort Davis. Other commodities increased in price at various rates.

Owing to delay in starting the projects, in delivery of materials, and in the arrival of skilled mechanics, the Army posts were not completed by July 1, 1920. At Fort Clayton all buildings were completed except headquarters, which is 85 per cent complete, one battalion barracks, 85 per cent, and one battalion barracks, 70 per cent; while at Fort Davis all buildings were completed except as follows: One 2-family captain's set, 84 per cent complete; one 2-family captain's set, 50 per cent

complete; one 4-family lieutenant's, 90 per cent; one 4-family lieutenant's, 80 per cent; headquarters building, 95 per cent; one battalion barracks, 70 per cent; and one battalion barracks, 60 per cent.

By August 1, 1920, these projects will be completed, except at Fort Clayton, one battalion barracks, 90 per cent, and at Fort Davis, one battalion barracks, 90 per cent. Table No. 4, attached, shows the estimated and actual time in man-days for the various crafts for each building. Similar charts were prepared semimonthly, from which the force required to complete the work was computed.

The total expenditures for building division work to July 1, 1920, was as follows:

	Labor.	Material.	Other charges.	Total.
Fort Clayton. Fort Davis.	\$508, 019	\$630, 467	\$177, 932	\$1,316,418
	520, 783	632, 831	161, 582	1,315,196

This leaves a balance of \$109,382 at Fort Clayton and \$110,604 at Fort Davis. Present estimates indicate that these posts will be completed within the appropriation.

#### NEW SILVER TOWNSITE, MOUNT HOPE.

On July 18, 1919, authority was given for the construction of 49 buildings at Mount Hope at an estimated cost of \$441,000. Thirty-nine of these buildings were to be of standard Panama Canal 12-family frame quarters for silver employees, and 10 standard Panama Canal 32-room frame quarters for silver bachelor employees. Work was not started on this project until January 1, 1920, and then only with a limited force, owing to inability of securing building materials. The project as a whole was 54 per cent complete on this date, the total expenditure to July 1 being \$236, 628.26.

In connection with this project, there was also authorized the construction of a silver commissary, of sufficient capacity to provide for future development of the townsite. This commissary is typical of the silver commissaries on the Canal Zone except that boots and shoes, hardware, and dry goods will be sold on the second floor. A 3-ton capacity freight elevator will be installed for handling goods to the second floor and a modern electric-driven refrigerating apparatus will be installed for refrigerating the cold-storage section. The estimated cost of this commissary is \$43,000. Work on July 1 was 75 per cent completed; cost was \$32,291.20.

#### LIGHTHOUSE AT CHANNEL END OF EAST BREAKWATER.

On September 9, 1919, authority was given the building division for the construction of a foundation for a 100-foot lighthouse at the channel end of east breakwater and for the purchase and erection of a lighthouse tower.

and for the purchase and erection of a lighthouse tower.

Proprietary purchase was authorized for a 100-foot steel tower similar to the one constructed at Punta Mala, and on October 8, 1919, contract was awarded for this tower at the price of \$6,500, delivered in Colon. Contractors' drawings were received on February 3, giving the dimensions of the base of the tower and sufficient data for

computing loads on tower base.

The foundation consists of a 23-foot 7-inch square reinforced-concrete deck designed for a live load of 150 pounds per square foot and supported on four sides by a reinforced-concrete beam 7 feet deep and 2 feet thick. Twelve steel-type piles, three at each corner, with cast-iron shoes, were driven to rock at elevation minus 115 feet. These piles were driven with a floating driver equipped with an 1,800-pound falling part steam hammer. The depth of the water at this lighthouse was 20 feet and upon filling the pipe piles with concrete, reinforcing cages consisting of 10  $\frac{7}{8}$ -inch round reinforcing bars were lowered to elevation minus 30, thus providing the reinforced-concrete pile support whenever the steel pipe has rusted away. The construction of this foundation was completed on June 22, and latest advice received from the States was on July 26, stating that steel tower had been completed and passed inspection and material was en route to the Isthmus.

#### COLON-CRISTOBAL INCINERATOR PLANT.

Work was commenced on the construction of a 60-ton daily capacity garbage incinerator located about 2,000 feet east of the east diversion on the Mount Hope-Fort Randolph road. This site was selected to allow for future development of the new silver townsite at Mount Hope. The building housing this plant is 37 feet 3 inches by 101 feet 3 inches, two stories high, reinforced-concrete construction with tile roof. The first floor contains two 30-ton units consisting of water-jacketed steel furnaces, together with preheaters induced and forced-draft fans, feed water pumps, and fuel

oil pumps. The second floor is of reinforced concrete designed to support a live load of 200 pounds per square foot, and will be used for the storage of garbage and its selec-

tion for proper incineration.

Garbage will be delivered to the plant in motor trucks with removable steel bodies. These bodies of 2½ yards capacity will be lifted from the trucks by an overhead traveling electrically operated crane and the contents will be either dumped directly into the incinerator hopper or stored until such time as furnace conditions warrant charging.

The plant is provided with a platform scale for weighing all garbage delivered to

the plant.

Steam generated in the incinerator will be used for drying fertilizer and bone meal which will be manufactured in an adjoining building. On July 1, 1920, this building was practically completed, all the equipment was installed, and the work remaining to be done consisted of placing the fire-brick lining in the combustion chambers and breeching. The estimated cost of this project was \$113,000; the cost to July 1, 1920, \$110,073.52.

COMBINED SHOP AND STOREHOUSE, CRISTOBAL MOLE.

A combined shop and storehouse is under construction on the Cristobal Mole to provide a 76 by 113 foot shop for the mechanical division for small marine work and also a storeroom for the supply department, 76 by 126 feet, for ships' stores. The supply department end of this building will be two stories high, and the second floor, having an area of 141 by 76 feet, will be available for rental to steamship companies for ships' supplies. Toilets are provided for gold and silver employees. A 3-ton freight elevator will handle material to the second floor. The estimated cost of this building is \$90,000, and on July 1, 1920, it was 52 per cent completed, the total expenditure to that date being \$46,182.33.

#### PANAMA RAILROAD STABLES.

It became necessary, owing to filling of certain lots in Colon, and for the municipal improvements of the same, to demolish all privately owned and Panama Railroad stables in Colon and reconstruct same between Sixteenth and G Streets and Folks River. Anthority was accordingly issued for the construction of stables to accommodate 432 horses and the necessary feed rooms, shops, storehouses, wagon sheds, and living quarters for attendants. The total estimated cost of this project is \$142,000, and the total cost at the end of the fiscal year was \$118,990. The project as a whole was 84 per cent completed.

REMODELING OF THE OLD ROYAL MAIL PIER FOR THE PANAMA RAILROAD FOR NATIVE PRODUCE.

Circular 512, dated November 11, 1913, requiring the demolition of all nonratproof piers by January 1, 1919, resulted in the demolition of the superstructure of the old Royal Mail pier. The foundation of this pier remained intact and was purchased by the Panama Railroad Company, who then authorized the construction of a fireproof and ratproof superstructure for the accommodation of small coastwise and native craft. Authority was issued on the building division for the designing and construction of same. A reinforced concrete slab was designed for 175-pound live load over the entire structure and was built accordingly, and the area was roofed with material salvaged from the old Panama Railroad Pier No. 2. Same was covered with corrugated iron. Sliding doors were installed on both sides of 30-foot centers for the handling of native produce. Water lines were installed for fire protection and for supplying water to ships. The area covered by this shed is 60 feet by 400 feet. The total cost of the project was \$38,247.70.

#### CONCRETE OIL TANKS.

Instructions were issued by the supply department for the construction of two reinforced concrete oil tanks of 55,000 barrels capacity each. These tanks are 115 feet inside diameter at the base and 116 feet inside diameter at the top. The tanks are 30 feet deep. The walls are 1 foot thick at the base and 6 inches thick at the top and are reinforced spirally with 1½-inch diameter rods. These rods were rolled by the mechanical division and a considerable saving was effected in the amount of steel used by obtaining these rods in greater lengths than are practical to secure commercially from the States. Our experience has been that 33-foot length reinforcing bars are as long as can be shipped conveniently from the States, and the bars as furnished by the mechanical division were from 40 feet to 70 feet long. The lap splice was used, necessitating a lap of 5 feet, and the obtaining of this steel in longer lengths resulted in a saving of approximately 5,000 feet on the two tanks.

After the pouring of the reinforced concrete floor slab of this tank the walls were poured with inner and outer forms built in 12-foot sections 6 feet in height, and pours

were made on alternating days, the intermediate day being required for the raising of the form and the placing or the reinforcing steel. The inner surface was given a rub-

Two mixers were used for the pouring of these walls and the pouring was so arranged that no new material was dumped on material which had been in place for more than

10 minutes.

Estimates indicated that a reinforced concrete roof would cost approximately one-half as much as a structural steel roof. A reinforced concrete roof was therefore built. This root is supported by one central column and 12 columns equally spaced on a 29-foot radius. From the central column 12 beams radiate to this intermediate ring of 12 columns, which are tied together at the top by 12 beams, forming a duodecagon. From this frame 24 beams were poured, supported by the wall of the tank. A 4-inch reinforced concrete slab covers the entire area. The estimated cost of these tanks is \$55,000, and the cost to July 1 was \$42,751.39 for the tank at Mount Hope and \$42,260.83 for the tank at La Boca. The increase in cost of the tank at La Boca is due to the fact that it was necessary to excavate 6,000 cubic yards of rock to prepare the foundation and to construct a dike and a fire wall. The status on July 1 was: Mount Hope tank, 98 per cent completed; La Boca tank, 60 per cent completed.

#### MISCELLANEOUS WORK.

Other work done for The Panama Canal during the past fiscal year was as follows: Moving two type-15 houses from Las Cascadas to Balboa and the recrection of same as a type-17 cottage for the Seamen's Home.

Removal of one type-14 residence from Las Cascadas and the recrection of same as a

dormitory for the Seamen's Home.

Removal and reerection of seven type-15 cottages and one type-7 two-family house from Las Cascadas to Pedro Miguel, at a cost of \$21,063 for nine apartments.

Removal and recrection of three type-18 bachelor quarters from Las Cascadas to

Balboa at a cost of \$32,208.27.

Removal of four modified type-7 quarters from Las Cascadas and their recrection as one-family houses for pilots' quarters—two at Gatun and two at Pedro Miguel.

Removal and recrection of three type-7 quarters from Las Cascadas to New Cristo-

bal, at a cost of \$19,397.06 for six apartments.

The construction of three play sheds for the bureau of clubs and playgrounds, one at Pedro Miguel, one at Gatun, and one at New Cristobal, at a cost of \$10,585.56.

The conversion of section F, old Ancon Hospital, into 14 family quarters; conversion of sections 17, 18, 19, and the kitchen of the old Ancon Hospital into 8 family quarters; conversion of the old Chinese detention camp into 8 family quarters, at a total cost of \$66,441.28 for 30 apartments; removal from the vicinity of section F, Ancon Hospital, of the colored maids' quarters to a site nearer the hospital activities.

The construction of a 60 by 300 foot warehouse for oil drums and waste for the supply

department, at a cost of \$22,607.81.

The demolition of the old Mount Hope storehouse and the recrection of same as a storehouse for the printing plant at Mount Hope, storehouse for the supply department at Mount Hope, and as a reclaiming shop and store for the supply department at Balboa. The demolition of the wooden section of the old French steel pier at Balboa

The painting of the exterior of all frame quarters in Balboa, La Boca, Pedro Miguel,

Gatun, and New Cristobal and 30 per cent of the frame buildings in Ancon.

Painting of the interior of 100 type-17 cottages, 96 type-14 cottages in Ancon and Balboa, the interior of all concrete residences in Balboa, the interior of the administration building, and the interior of all quarters in La Boca.

#### WORK FOR INDIVIDUALS AND COMPANIES.

Work was started on the community house for the National Catholic War Council at Balboa. The estimated cost of this building is \$85,000 and the expenditure to July 1, 1920, was \$28,174.34.

Work was started on the construction of the office building and quarters for the Royal Mail Steam Packet Company. The estimated cost of this building is \$275,000 and the expenditure up to July 1, 1920, was \$57,795.73.

Work was completed on the office and bachelor quarters in Balboa for the Central

and South America Cable Company.

FORCE

On July 1, 1919, the force was 205 gold men and 1,530 silver men, a total of 1,735. This was increased to the maximum of 2,268 men on November 1, 1919, of which 328 were on the gold roll and 1,940 on the silver roll. At the end of the fiscal year, June 30, 1920, the force totaled 1,887 men, of which 512 were on the gold roll and 1,375 on the silver roll.

TABLE No. 1.—Increase in cost of gold labor due to increase in pay over rates in effect when project was approved.

# FORT CLAYTON ARMY POST.

1, 1921 1, 1922		Period.	, 965.82, 015.60 7, 580 11, 056.40 1, 138 5, 506.24 5, 888 3, 915.52 0, 720 13, 029.60	174.00 400.00 508.00 388.00 1,968.00	39, 234. 96 5, 885. 24	45, 120. 20 4, 512. 02	49,632.22	
		Man day	U14 4.64 G	225 375 300 225 2,300				
	ij	. 1	Period.	\$70.00 4,846.40 1,410.24 2,885.12 4,721.60 49.92	144.00 124.00 152.00 416.00	14,819.28 2,222.89	17, 042. 17 1, 704. 22	18,746.39
	e 1 to		Day.	25.2.2.2.2.1. 00.2.2.2.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0	1.84 2.48 3.04 2.08			
	June	Man days.		28839 270 270 52	75 50 50 200			
	Apr. 1 to June 1.	Increase.	Period.	\$537.60 2,888.00 1,443.20 544.001, 86.40	38.00 102.00 108.00 80.00 272.00	8,887.20 1,333.08	10, 220. 28 1, 022. 03	11, 242. 31
1920	. 1 to	Inc	Day.	\$1.68 1.52 1.76 1.36 1.96	1.52 1.36 2.16 1.60 1.36			
	Apr	·s	Man day	222225	200 200			
	Feb. 1 to Apr. 1.	Increase.	Period.	\$1.60 \$560.00 35 1.36 1, 870 00 15 1.52 1, 124.80 85 1.28 2, 816.00 2, 05 1.96 73.92	72.00 90.00 96.00 72.00 256.00	7, 414. 72 1, 112. 21	8, 526. 93	9,379.62
	1 to	Inc	Day.	\$1.60 1.36 1.52 1.52 1.28	1.20 1.92 1.44 1.28			
	Feb.	Man days.		854885	20020332			
8	reb. 1.	Oct. 1 to Feb. 1. Increase.	Period.	8.808.00 8.01, 420.00 1.041, 333.60 1.041, 333.60 1.0240	64.00 64.00 144.00 84.00 850.00	7,583.36	8,720.86	9, 592. 95
1919–1920	1 to I		Day.	- A	64 144 112 80			
1	Oet.	Man days.		1,010 1,775 1,340 3,200 66	100 100 100 75 1,100			
	to 1.	Increase.	Period.	\$40.00 32.00 134.40 144.00	36.00	530.40 79.56	609.96	670.95
	Aug 1 to Oct. 1.	Inc	Day.	\$0.16 .16 .32 .24 .24	1.04			
1919		•	Man days	800 4 420	888			
	1,10	In- crease.	Period.					
	July 1 to Aug. 1.		Day.	1400				<u>  :</u>
-	',	•	Man days	1 1 4	<u> </u>	1 : :	<u>                                     </u>	1
	Artisans: Bricklayers Bricklayers Plasterers Planters Planters Porgenial Forgenial Bricklayers Bricklayers Bricklayers Plasterers Plasterers Planters Cappenters Total 15 per cent gratuity Cost to building division 10 per cent, P. C. Cost to U. S. Army							Cost to U. S. Army

<sup>1</sup> Subject to change effective Apr. 1.

TABLE NO. 2.—Increase of cost of gold labor due to increase in pay over rates in effect when project was approved.

# FORT DAVIS ARMY POST.

Articone.				_							_										
Bricklayers.				80	6 \$24.		80.	0 \$788	3.00	75 \$1.	60 %	300.00			\$571.20	405	\$2.00	8810.		25	93.20
Plasterers	:	:	-	125 . 1	16 20.00	2	125 . 8	80 1, 700	1,700.001,7	700 1.	1.36 2.5	312.00	1.950	1.52	2,964.00	003.150	2.08	6.552.	9,050	3	548.00
Plumber		;	4	Ī	2 128.	`~;		411,716	3.00	300	52 1,	216.00	•		1,020.80	970	2.08	2,017.	4	9	98.40
Painters		-	-	ľ	7	`	10	2 76	3.80	. 09.	64	186, 40			, 576.00	1.540	2.24	3, 449.	'n	4	08.80
Carpenters			10	ľ	4 120.	2	8. 09	0 2.200	00 2.1	00 1	28 2.	388.00	_		2.380.00	3,600	2.08	1.488	<u>`</u>	4	29.00
Mefal lathers.		:	:	53		`	33 . 96		, 68	59	, 96	\$3.04	•		1 45.15	33	96	1 31.68		<u></u>	51.52
Foremen:										_								-		_	
Bricklayers.	:		:	20		Ξ			8	50 1.		72.00	25		% ∞		1.84		22		39.80
Plasterers	:	:	:	50	- 1	_			8	75 1.		90.00	75		102.00		1.92				00.00
Plumbers	:	:	-	_	36.	_			8	50 1.		96.00	50		108.00		2.48				08.00
Painters			:	1.04			75 1.18	8	8	50 1.		72.00	50	1.60	80.00	200	3.04				88.00
Carpenters	:	:	9	600	144.	0 1,			8	300	1.28	256.00	200		272.00		2.08	416.	00 2,300	-	968.00
	1	1	1	1		-	1		1	1	1		Ì	1					.	1	1
Total	:	:	:	-	472.00	99	:	7,748.4	3.48	:	- 27	7, 941. 44		-	8,122.92	1	1	21, 184.	88	45,4	45, 469. 72
· · · · · · · · · · · · · · · · · · ·		:			5	3	:	1,110	:	<u>:  </u> :	:				, pro. 2					6,0	0. ±0
Cost to building division.	i	:	-	-	. 542.	08.0	:	. 8,910.75		<del>:</del>	9,	9, 132. 66		:	9,341.36			24,362.61		52,20	52, 290, 18
10 per cent, 1. C	:	:	:	:		20	:	- 231	,	:	:	919.20	-	:	93419	:	:	436	97	7, °C	20.62
Cost to U. S. Army.		<u>;</u>   <u>;</u>			. 597.08	80		9,801	82		10,0	145.93			10, 275. 50			26, 798. 8	87	57,51	519.20
										-											1

1 Subject to change effective Apr. 1.

Table No. 3.—Additional cost due to increase in wages to silver employees,

## FORT CLAYTON.

	June 1, 1919, to July 1, 1919.	July 1, 1	July 1, 1919, to Feb. 1, 1920.	b. 1, 1920.	Feb. 1, 1	1920, to Jul	Feb. 1, 1920, to July 1, 1920.	July 1, 19	July 1, 1920, to Aug. 1, 1920.	1, 1920.	Total, June 1, 1919, to Aug. 1, 1920.	e 1, 1919, 1, 1920.
	Man days.	Man days.	Increase per day.	Increase Additional cost.	Man days.	Increase per day.	Increase Additional cost.	Man days.	Increase per day.	Addi- tional cost.	Man days.	Addi- tional cost.
	25,000	75, 500	75, 500 \$0.12	\$9,066.00 1,359.90	29,000	29,000 \$0.28	\$8,120.00 1,218.00	6,000	\$0.44	\$0.44 \$2,640.00	\$19, \$26. 00 2, 973. 90	\$19, \$26. 00 2, 973. 90
L				10,425.90			9, 338, 00			3,036.00	2, 270. 99	22, 799, 90 2, 270, 99
<u> </u>				11, 468, 49			·	10, 271. 80 3, 339. 60 25, 679. 89		3, 339, 60		25,079.89

### FORT DAVIS.

All classes. Plus 15 per cent gratuity.	76,500 \$0.12	\$0.12	\$0.12 \$9,180.00 30,500 1,377.00	30, 500	\$0.28	\$8,540.00	6,000	- :	\$2,640.00	\$0.44 \$2,640.00 113,000 \$20,360.00 3,054.00	\$20, 360.00 3, 054.00
Cost to building division			10, 557.00 1, 055.70			9,821.00			3,036.00		23, 414. 00 2, 341. 40
Cost to U. S. Army			11,612.70			10, 803. 10			3, 339. 60		25, 755. 40

On July 11, 1919, all silver employees receiving 20 cents por hour or less received a 2 cent increase. On July 11, 1919, all silver employees receiving more than 20 cents por hour received a 1 cent increase. On Feb. 1, 1920, all silver employees received an increase of 2 cents per hour. On July 1, 1920, all silver employees received an increase of 2 cents per hour.

Table No. 4.—Estimated and actual time in man days for various crafts.

	1			1	····		1		
	В	ricklaye:	rs.	]	Plasterer	8.		Rubbers	
Building name.	Esti-	Act	tual.	Esti-	Act	tual.	Esti-	Act	tual.
	mate.	Davis.	Clay- ton.	mate.	Davis.	Clay- ton.	mate.	Davis.	Clay- ton.
Headquarters. Special barracks. Battalion barracks. Do. Do. Fleld officers' and captains' quarters. Do. Do. Do. Do. Do. Do. Do. Do. Do. Do	75 666 175 175 175 175 175 151 151 151 151 151	1 1124 614 2134 1912 2754 495 54 472 473 473 58 511 682 683 684 714 672 263 263 294 294 295	63 53½ 170½ 166½ 185½ 42 42 43 43½ 47½ 47½ 47½ 511 48 48 49 67 66 66 66 66 66 66 66 30 30 30 30	187 205 595 595 595 167 167 167 167 167 167 167 167 167 192 192 192 192 192 192 193 195 195 195 195 195 195 195 195 195 195	368 3962 8881 1,142 1592 1594 1544 124 124 124 124 124 124 124 125 127 1176 1176 1176 1176 1187 1187 1187 118	305 2304 750 740 1114 111 127 130 116 131 130 126 1161 117 117 117 161 1534 1764 175 2094 666 666 666	170 220 410 410 410 16 16 16 16 16 16 16 16 16 16 33 33 32 32 32 32 32 32 32 32 33 33 33	22514 2383 559 5593 4594 241 242 243 243 243 243 243 281 281 281 281 281 281 281 281 281 281	279½ 85 2248½ 619 622 183 18 17½ 17 17 10 10 11¼ 11 14½ 14 14 17 28½ 28 30 28³ 7½ 6 6 6 6 6 5 5 5
Do	30 30 18	$43\frac{3}{4}$ $44$ $22\frac{1}{2}$	$ \begin{array}{r} 29\frac{1}{2} \\ 29\frac{1}{2} \\ 30 \end{array} $	59 59 48	85½ 85½ 54	61½ 60 48	20	33 33 18	8
Total	1,949	2, 1813	1,865½	5,918	7, 1081	5,8631	2,051	2,6971	2,2401

<sup>&</sup>lt;sup>1</sup>6,000 more blocks than Fort Clayton headquarters.
<sup>2</sup> Part of the rubbing done by silver labor.
<sup>3</sup> 10,000 more blocks than Fort Clayton battalion barracks.

Table No. 4.—Estimated and actual time in man days for various crafts—Continued.

'	(	Carpente	rs.		Plumber	s.	F	Roofers		Р	ainter	3.
Building name.		Act	ual.	n	Act	ual.	TC . (1	Act	ual.	Esti-	Act	ual.
	Esti- mate.	Davis.	Clay- ton.	Esti- mate.	Davis.	Clay- ton.	Esti- mate.	Da- vis.	Clay- ton.	mate.	Da- vis.	Clay- ton.
Headquarters. Special barracks. Battalion barracks. Do. Do. Field officers' and captains' quar-	600 580 900 900 900	849 <sup>3</sup> 530 <sup>1</sup> 11,249 <sup>3</sup> 11,250 1,371 <sup>3</sup>	756½ 643 1,346 1 994 11,092	213 246 770 770 770	2263 2633 1 685 1 685 636	235\frac{1}{4} 231 733\frac{1}{2} 1 760\frac{1}{2} 1 686\frac{1}{2}	48 53 80 80 80	$76\frac{3}{4}$ $59\frac{3}{4}$ $94\frac{3}{4}$ $128\frac{1}{2}$ $120\frac{1}{2}$	75 593 882 773 111		249½ 146½ 1375 1375 375	195 174 314 <sup>2</sup> 1 377 1 385 <sup>1</sup> / <sub>2</sub>
ters	140 140 140 140 140 140 140 140 140 140	$\begin{array}{c} 203\frac{1}{4} \\ 203\frac{1}{4} \\ 200\frac{1}{2} \\ 200\frac{1}{2} \\ 191\frac{1}{4} \\ 196\frac{1}{2} \\ 170 \\ 170\frac{1}{4} \\ 172\frac{1}{4} \\ 172\frac{1}{4} \\ 172\frac{1}{4} \\ 172\frac{1}{4} \end{array}$	168 169 133 129 150 187 187 187 188 147 158 167	54 54 54 54 54 54 54 54 54 54 54	62 62 56 57 65 <sup>1</sup> / <sub>2</sub> 53 54 56 56 58 <sup>1</sup> / <sub>4</sub> 58 <sup>1</sup> / <sub>4</sub> 58 <sup>1</sup> / <sub>4</sub>	$\begin{array}{c} 46\frac{1}{4} \\ 46\\ 53\frac{1}{4} \\ 52\\ 44\frac{1}{4} \\ 46\\ 52\\ 53\\ 46\\ 46\\ 47\frac{3}{4} \end{array}$	9 9 9 9 9 9 9 9 9 9	$\begin{array}{c} 20 \\ 20 \\ 18\frac{1}{4} \\ 18\frac{1}{4} \\ 10\frac{1}{2} \\ 10\frac{1}{2} \\ 9\frac{1}{4} \\ 13\frac{1}{4} \\ 13 \\ 13 \\ 13 \\ \end{array}$	9 8½ 10 10 11½ 10½ 11 11 11 10 8 8	40 40 40 40 40 40 40 40 40 40 40	38 39 39 36 36 54 54 51 51 51	57 57 57 58½ 45½ 45 41 40 45 45 46
Lieutenant 4-family quarters.  Do  Do  Do  Do  Do  Lieutenant 6-set	150	$\begin{array}{c} 212 \\ 212 \\ 241 \\ 241 \\ 246\frac{3}{4} \\ 246\frac{3}{4} \end{array}$	$\begin{array}{c} 207 \\ 198 \\ 234 \\ 234 \\ 204\frac{1}{2} \\ 206\frac{1}{2} \end{array}$	57 57 57 57 57 57 57	63 63 76 <sup>1</sup> / <sub>4</sub> 76 58 <sup>1</sup> / <sub>2</sub> 58 <sup>1</sup> / <sub>2</sub>	$51\frac{1}{2}$ $52$ $64$ $56\frac{1}{2}$ $55$	14 14 14 14 14 14 14	10 10 16 16 93 93 93	12 11 10 10 10 11 <sup>1</sup> / <sub>2</sub> 10	45 45 45 45 45 45	$\begin{array}{c} 42\frac{1}{2} \\ 42\frac{1}{2} \\ 45 \\ 45 \\ 52\frac{1}{4} \\ 52\frac{1}{4} \end{array}$	60½ 65 47½ 46 57½ 57
quarters Noncommissioned officers' quarters Do Do Do	138 138 138 138	216 163 <sup>3</sup> / <sub>4</sub> 163 <sup>1</sup> / <sub>2</sub> 187 <sup>1</sup> / <sub>4</sub> 187 193 <sup>1</sup> / <sub>4</sub> 193 <sup>1</sup> / <sub>4</sub> 54 <sup>1</sup> / <sub>2</sub>	209½ 169 169 163 163 204 204 101	65 46 46 46 46 46 46 38	$\begin{array}{c} 64 \\ 50 \\ 50 \\ 51 \\ 51 \\ 40\frac{1}{2} \\ 40\frac{1}{4} \\ 49\frac{1}{2} \end{array}$	$\begin{array}{c} 36 \\ 35 \\ 41\frac{1}{2} \\ 41 \\ 37\frac{1}{2} \\ 38 \\ 68 \\ 56\frac{1}{2} \end{array}$	9 9 9 9 9 9 9 9	$\begin{array}{c} 9\frac{1}{4} \\ 7\frac{1}{2} \\ 7\frac{1}{2} \\ 10\frac{1}{4} \\ 14 \\ 13\frac{3}{4} \\ 9\frac{1}{2} \end{array}$	18½ 9½ 9 7 7 8½ 8 18	38 81 81 81 81 81 81	68 <sup>3</sup> 32 <sup>3</sup> 47 <sup>1</sup> 47 <sup>1</sup> 41 <sup>1</sup> 41 <sup>1</sup> 36	42¼ 57 60 72¼ 72 63 63 36
Total	7,524	10, 2581	9,234	4,138	3,9481	3,9121	622	8033	679	2,779	3,704	2,8353

<sup>1</sup> Estimated part of this work.

TABLE No. 5.—Comparative unit cost of buildings.

											020
Cost per cubic foot.	10		\$0.2075	. 2205 . 2711 . 2175	. 1441 . 1481 . 1531 . 0417	.0401		. 2344	. 2579	. 2325	.1460 .1558 .1555 .0281 .0290
Cubical contents (leet).	6		\$72,000	92, 300 86, 700 64, 000	1,048,000 522,000 556,000 97,000			72,000	92, 300 86, 700	64.000	1, 045, 000 522, 000 556, 000 97, 000 88, 600 60, 600
Cost of building proper.	∞		\$14,939.34	20, 351. 83 23, 506. 63 13, 919. 67	150, 983.38 77, 296.28 85, 095.99 4, 045.75	3, 556.02 3, 140.90 1, 358.10		16,876.83	22, 101. 44 22, 357. 29	14, 877. 98	152, 974, 55 81, 835. 88 86, 460. 80 2, 728, 46 3, 356. 57 1, 757. 53 361. 19
M lla- neous.	7			, , , , , , , , , , , , , , , , , , ,	\$301.92	- 1			32.07		1, 209. 92
Municipal work.	9				1 1 1	2, 052.89 1, 401.64 1, 228.11					2,064.32 1,749.93 1,333.42 1,210.99
Electrical work,	ro		\$904.94	1, 148. 08 1, 359. 84 851. 92	4, 068. 08 3, 070. 05 5, 101. 63 317. 76			753,95	985.11 812.82	1,004.88	4, 152.67 2, 094.28 5, 237.91 13.67 28.87 3.92 1.20
Plumbing.	4		\$1,402.21	1, 581.44 2, 078.25 1, 274.01	20, 708. 91 7, 664. 35 5, 963. 95 229. 19	242.18 238.78 5.12		1,567.84	1,715.95 1,741.88	1,320.99	20,762.71 7,232.67 5,732.93 203.33 207.18 243.48
Handling material.	8		\$668.03	770.70 741.11 351.55	6, 117. 65 2, 894. 02 2, 950. 73 93. 85	74. 07 93. 24 16. 16		595.64	677.08 943.24	504.61	2, 501. 62 2, 516. 81 2, 751. 19 20. 68 62. 94 76. 78 69. 93
Division cost of project.	2		\$17,914.52	23, 851. 61 27, 685. 83 16, 397. 15	181, 878. 02 90, 924. 70 99, 414. 22 7, 107. 51	6, 159. 85 5, 083. 30 2, 681. 54		19,794.26	25, 479. 58 25, 887. 30	17, 708. 46	182, 391, 55 93, 679, 64 101, 392, 75 5, 036, 46 5, 405, 49 3, 415, 13 1, 643, 31
Class.	1		C, 2 story.	dodo	C, 3 story. C, 2 story. do D, 1 story.	op op		C, 2 story .	do	do	C, 3 story. C, 2 story. do. D, 1 story. do. do.
Name of building.		FORT CLAYTON INFANTRY REGI-	2 set captain's and field officers'	quarters. 4 set lieutenant officers' quarters. 6 set lieutenant bachelor quarters. 4 set noncommissioned officers'	Battalion barracks Special barracks Ifeadquarters Stables, 62 stalls.	Stable, 54 stalls. Stable, 35 stalls. Wagon shed, 29 stalls.	FORT DAVIS INFANTRY REGI- MENT.	2 set field officers' and captain's	ant's quarters	toncommissioned officers'	arracks. racks. ers. stalls. talls. talls.
Number of build-	IIIgs.		12	919	89-18			12	1	9	
Item.			1	0100 4	10 CF 00	921		12	13	15	10 113 113 113 113 113 113 113 113 113 1

Table No. 5.—Comparative unit cost of buildings—Continued.

	Cost per cubic foot.	01	0	. 1386	.1007	1620.		. 3227 . 2347 . 1983		.0864 .0632 .1317 .1075 .0987 .2127 .1123 .1123		. 0753	.3154	.1154	.0534
	Cubical Contents (feet).	6	000	\$72,500 72,500	28,000	305,700		50,500 97,200 68,200	,	165, 900 1459, 900 125, 900 126, 900 17, 500 19, 400 37, 500 37, 500		104,700	55,100	207,600	378,000 26,200 15,700
-	Cost of Coulding control of Contr	∞	5	\$10, 155. 46 10, 046. 54	5,840.50	24, 190. 72		16, 298. 27 22, 815. 63 13, 522. 77		14, 254, 48 9, 414, 31 13, 461, 42 13, 540, 25 6, 707, 79 3, 732, 88 23, 525, 80 1, 938, 85		7,883.89	17,377.04	23, 953. 87	 EEE
	Miscella-	7	•	\$555.55				61. 65 72. 55 415. 02		5,011.42 (4) 1,620.49					 EBE
	Municipal work.	9						\$0.34		655.00 109.00 639.55 77.14 2, 344.04		26.04		70.45	 666
6	Electrical work.	10		81, 125.34	541.59	1,146.69		1, 015. 63 1, 197. 44 914. 37		1, 785, 09 626, 39 2, 331, 29 667, 11 667, 11 (1) 508, 90 1, 459, 71 133, 89		866.58	1,277.28	1, 551.15	998
6 000	Plumbing.	4		\$1,110.31	969.11	3,618.95		1, 021. 18 1, 913. 15 1, 301. 00		1, 921. 28 7. 11 2, 512. 56 3. 20 (1) 1, 135. 82 997. 29		843.08	488.26	2, 934.87	£3G
	Handling mater.al.	ಣ		\$584.44	3	1,733.67		819.64 840.16 549.90		826.20 1,683.87 781.89 764.13 254.83 (1) 227.75 1,261.28		694.35	1,030.93	1,057.92	333
Jamos	Division cost of project.	2		\$12, 975. 55	7,351.20	30, 690.03		19, 216. 37 26, 838. 93 16, 703. 40		19 442.05 16,852.10 22,726.71 14,974.69 7,331.65 3,723.00 5,682.49 31,208.61 2,265.19		10,313.94	20, 173. 51	29, 568. 26	20, 205. 00 2, 761. 05 1, 861. 14
	Class.	-		A, 2 story.	do.	op		F, 2 story.		D, 2 story. A, 1 story. D, 1 story. B, 1 story. A, 1 story. A, 1 story. do. B, 1 story. D, 1 story.		A, 1 story.	C, 2story	A, 2 story.	D, 1 story.
	Name of building.		FORT SHERMAN.	type EE-2.		type 2O. Barracks, 150 men	FRANCE FIELD,	Field officers' quarters. 4 set lieutenant's quarters. 4 set noncommissioned officers' quarters.	U. S. NAVAL AIR STATION, COCO SOLO.	Barracks, 100 men Boat house Mess hall, 300 men Paymaster's storehouse Carporner and repair stop. Radio shop and store Administration building Ammunition storehouse Forge shop.	PANAMA CANAL BUILDINGS.	Silver employees' clubhouse,	Gatun. Office, lighthouse, subdivision,	Gatun. Tuberculosis ward, Corozal Hos-	pira. Oil storage shed, Balboa 10-stall garage, Ancon 6-stall garage, Balboa
	Number of build.	ings.		-	- 63	23		T #9		далалала		-	-	1	
	Item.			8 8	23 23	56		888		834883548888888888888888888888888888888		39	40	41	24 254 44

		REPOR
	. 1259 . 1327 . 0786 . 0328 . 1336	.3102
-	68, 400 58, 300 35, 700 34, 000 23, 900	160,000
	8,614.17 7,738.18 2,807.59 1,114.42 2,538.73 1,254.26	49,640.11
	\$15.09 \$10.40 \$64.35 \$7.79 \$43.01 \$220.81	2, 922. 89
	100.54 40.52 423.53	1, 592.03
	470.69 202.32 278.86 59.10 179.59 119.42	2, 484. 67
	9,499.95 8,851.44 3,491.32 1,183.31 3,484.86 1,594.49	56, 639. 70
	D, 1 story.  E, 1 story.  do  do  do  do  do	C, 2story
PANAMA BAILROAD COMPANY.	1 Garage, Mount Hope. D, 1 story. 6 Stables. B, Vagon sheds. Ollice and feed room. 1 Shop building. do.	INDIVIDUALS AND COMPANIES.  Office building for Central & C, 2story South American Telegraph Company.
	500 500 500 500 500 500 500 500 500 500	51

No itemized costs kept.

Column No. 7, "Miscellancous," includes design and all items of other charges not included under columns Nos. 3, 4, 5, and 6. Column No. 8, "Cost of building proper," includes labor and material other than that included under columns Nos. 3, 4, 5, 6, and 7.

DESCRIPTION OF VARIOUS CLASSES OF BUILDINGS.

Class C: Reinforced concrete footings, piers, beams, columns, and veranda thoors; concrete block walls and partitions; wood interior thoors; red mission tile roof on wood sheath-Class A: Wood piers on concrete footings; asphalt shingle roof. Class B: First floor paved over earth fill; reinforeed concrete columns and I cams; block walls; asphalt shingle roof on wood rafters.

Class D: Concrete floor and rat wall; walls and roof supports wood.

Class B: Concrete floor and rat wall; concrete block walls, wood nof supports; corrugated galvanized iron roofing.

Class E: Reinforce door and rat wall; concrete block walls wood nof supports; concrete floor wall and partitions; wood interior floors: green asphalt shingle roof on wood class F: Reinforce concrete footings; piers, beans, colourns, and verainda floors; concrete block walls and partitions; wood interior floors: green asphalt shingle roof on wood

ing and rafters.

### Dredging Division.

The details of the operations of the dredging division during the fiscal year are covered in the report of the superintendent of dredging, which follows:

DREDGING DIVISION.

### J. M. Pratt, Superintendent.

The following report of operations in the dredging division during the fiscal year ended June 30, 1920, is submitted herewith:

### DIVISION ORGANIZATION.

All dredging operations embracing Atlantic entrance, Gatun Lake, Gaillard Cut, Miraflores Lake, and Pacific entrance sections of the Canal, with auxiliary dredging at the Atlantic and Pacific terminals and Chagres River gravel operations, have been handled direct from the division headquarters at Paraiso for the entire year. Field offices were maintained at Balboa and Cristobal.

### DREDGING PLANT.

The following dredges and other floating plant were in operation during the year: The 15-yard dipper dredge Paraiso was operated for nine months of the year on general maintenance work at East and West Culebra, Gatun Lake, excavating and deepening channel at Paraiso and Miraflores P. I. improvement works, excavating material at Cucaracha slide, widening the approach channels to Cristobal Harbor and

west slip coaling station, and deepening anchorage slips north and south of Pier No. 6, Cristobal Harbor.

The 15-yard dipper dredge Gamboa was operated for seven months of the year excavating and deepening the channel at Paraiso P. I. improvement works, excavating slide material at East Culebra and Cucaracha slides, and widening the approach channel to the west slip of Cristobal coaling station.

The 15-yard dipper dredge Cascadas was engaged nearly 10 months of the year on general maintenance and original excavation in Balboa Inner Harbor, and deepening the slip between Docks Nos. 7 and 8 and in front of Dock No. 6, Balboa, removing

shoals at West Culebra and material from Cucaracha slide.

The French ladder dredge Marmot returned to active service December 8, 1919, and for the remainder of the fiscal year was engaged in the sand and gravel service in the Chagres River, also removing shoal at the Gamboa dock and uncovering the gravel beds. All concrete on the Isthmus is manufactured from sand and gravel obtained in this manner.

The 20-inch pipe-line dredge No. 83 returned to service November 28, 1919, and was engaged five and one-half months on general maintenance work in the Canal channel at the Pacific entrance and at Miraflores P. I. improvement work. This dredge was then retired from dredging operations May 14, 1920. This dredge was used from June 21 to 27 to remove coal from a sunken barge and again laid up.

The 20-inch pipe-line dredge No. 84 was operated for 10 months of the year on general maintenance work in the Pacific entrance, Balboa Inner Harbor, including exeavating in front of Docks Nos. 6 and 7, Balboa Harbor, and removing material in front of

Cucaracha slide.

The 20-inch pipe-line dredge No. 86 was engaged nine months during the year on general maintenance work at the Pacific entrance, Balboa Inner Harbor, and excavating at Miraflores improvement work, and deepening channel in Gaillard Cut south of and at Cucaracha slide.

The drillboat Teredo No. 2 was engaged for seven and one-half months of the year in mining operations at Paraiso and Miraflores P. I. Channel improvement works, also in the Pacific entrance channel and in Gaillard Cut at Cucaracha slide.

The hydraulic grader No. 1 was engaged for 11 months of the year ditching and grading West Culebra, including Barge Repair and Lirio slides, and sluicing at

Cucaracha slide.

The hydraulic grader No. 3, retired from service last year, was returned to work November 1, 1919, and was engaged in sluicing and grading at Cucaracha slide for the remainder of the fiscal year.

The floating air compressor No. 27 was tied up at Gamboa out of commission from July, 1919, to January 31, 1920, and was used in raising the sunken steamship Marne

at Cristobal from the latter date to May 7, 1920, and again retired from service May 8, 1920.

The 300-ton cranes Hercules and Ajax, with the crane boat La Valley and wrecking

barge No. 91, were operated by the dredging division the entire year.

The seagoing ladder dredge Corozal was tied up at Gamboa from July to September, 1919, and was under repairs at Balboa during September and part of October, 1919. This dredge was sold to the United States Engineer Office, Philadelphia, Pa., and

turned over to representatives of that office November 7, 1919, and left the Isthmus for Philadelphia under tow of the Navy collier Vulcan D rember 11, 1919.

There were four tugboats in the dredging service on July 1, 1919. During the fiscal year three were loaned to this division between March and July, 1920, by other divisions, and at the end of the fiscal year there were seven tugboats in the service.

A total of 14 launches was operated during the year.

The following table shows the number of days the dredges were retired from dredging service for repairs, alterations, or on detached service:

Table No. 1.—Number of days dredges were retired from dredging service.

Dredge.	Type.	Days out of service.	Cause.	Remarks.
Paraiso Gamboa Jascadas Jorczal Marmot No. 83	15-yard dipperdododoSeagoing ladderFrench ladder20-inch pipe-line suctiondododododo		do do do	Tied up (not working) 90 days. Tied up (not working) 163 days. Tied up (not working). Tied up (not working) 51 days. Tied up (not working) 16 days. Tied up (not working) 164 days. Tied up (not working) 2 days. Tied up (repairs to relay) 4 days.

### DREDGING.

Dredges operating in the Canal prism, at the Atlantic and Pacific terminals, and in the sand and gravel service, removed a total of 4,750,686 cubic yards of material. The following table, divided into Canal prism and auxiliary dredging, shows the output of each dredge during the year, with the total and unit costs of same:

Table No. 2.—Output of all dredges, with total and unit costs.

Dwadges	Months		Can	al prism dre	dging.	
Dredges.	worked.	Earth.	Rock.	Total.	Cost.	Unit cost.
Dipper: Paraiso. Gamboa. Cascadas	9 7 10	429,785 204,600 266,650	429, 425 334, 250 414, 700	859, 210 538, 850 681, 350	\$380, 221. 93 300, 593. 34 257, 330. 84	\$0, 44252 . 55784 . 37768
Total		901,035	1,178,375	2,079,410	938, 146. 11	. 45116
Ladder: Marmot	7					
Total						
Suction: No. 83 No. 84 No. 86	$10 \\ 9$	423,100 635,600 528,200	8,500 37,000	423,100 644,100 565,200	67,691.48 119,405.45 96,902.12	. 15999 . 18538 . 17145
Total		1,586,900	45,500	1,632,400	283,999.05	. 17398
Grand total	•••••	2,487,935	1,223,875	3,711,810	1,222,145.16	. 32926

Table No. 2.—Output of all dredges, with total and unit costs—Continued.

	Month		Au	ixiliary dred	ging.	
Dredges.	worked.	Earth.	Rock.	Total.	Cost.	Unit cost.
Dipper: Paraiso Gamboa. Caseadas.	9 7 10	33,500 24,900 220,800	54,650 128,200 10,000	\$8,150 153,100 230,800	\$37, 653. 54 51, 178. 41 154, 049. 40	\$0, 42715 . 33948 . 66746
Total		279, 200	192,850	472,050	242, 881. 35	. 51452
Ladder: Marmot	7	134,826		134,826	76, 204. 28	. 56520
Total		134,826		134,826	76, 204. 28	. 56520
Suction:	5½ 10 9	500 217, 500 214, 000		500 217,500 214,000	1,478.50 37,462.39 40,902.03	2. 95700 . 17224 . 19113
Total		432,000		432,000	79,842.92	. 18482
Grand total		846,026	192,850	1,038,876	398, 928. 55	. 38401
Dredges.	Months		Canal prisi	n aud auxili	ary dredging.	
	worked.	Earth.	Rock.	Total.	Cost.	Unit cost.
Dipper: Paraiso	9 7 10	463, 285 229, 500 487, 450	484,075 462,450 424,700	947, 360 691, 950 912, 150	\$417, 875, 47 351, 771, 75 411, 380, 24	\$0.44109 .50838 .45100
Total		1,180,235	1,371,225	2,551,460	1,181,027.46	. 46288
Ladder: Marmot	7	134, 826		134,826	76, 204. 28	. 56520
Total		134,826		134,826	76, 204. 28	. 56520
Suction:	5½ 10 9	423,600 853,100 742,200	8,500 37,000	423,600 861,600 779,200	69, 169, 98 156, 867, 84 137, 804, 15	. 16329 . 18207 . 17685
Total		2,018,900	45,500	2,064,400	363, 841. 97	. 17625
Grand total		3,333,961	1,416,725	4,750,686	1,621,073.71	. 34123

Note.—Dredging costs in the above table do not include costs of mining 13,814 cubic yards of rock by drill boat *Teredo No. 2*, which amounted to \$26,655.86, at the Pacific entrance, as this material was not handled by dredges during the fiscal year.

Dredging costs in the above table include the cost of mining 30,587 cubic yards of rock drilled and blasted the previous fiscal year at a cost of \$44,881.11, and 33,283 cubic yards of rock mined during the present fiscal year at a cost of \$9,912.69.

Dredging costs in the above table do not include cost of grading, ditching, and sluicing Gaillard Cut, which amounts 1 to \$10.5 970.66.

which amounted to \$105,970.66.

While the preceding table shows the actual cost of the yardage removed, the cost

of the total yardage handled by dredges would be a trifle less, as there were 35,000 cubic yards of material rehandled for which no credit was taken upon second handling. With the exception of dredges Nos. 84, 86, and Marmot, costs are for materials placed on the dump. Costs of dredge Marmot are for sand and gravel delivered alongside the gravel dock at Gamboa, and of dredges Nos. 84 and 86 for material delivered to relay pumps. The pipe lines were 5,200 feet from the dredge to the outfall at Balboa and 5,100 feet at Cucaracha slide.

The following tables show the monthly output of all dredges, exclusive of the sand and gravel output, by geographical districts:

 $\begin{array}{lll} \textbf{Table No. 3.--} \ Yardagc \ removed \ from \ the \ -42\text{-}foot \ mean \ sea-level \ contour \ in \ the \ Atlantic \\ Ocean \ to \ Gamboa. \end{array}$ 

	C	anal prisn	١.		Auxiliary.		Grand
Month and year.	Earth.	Rock.	Total.	Earth.	Rock.	Total.	total.
July				4,500	2,500	7,000	14,400
August. September October November				29,000 15,900 9,000	52, 150 79, 500 48, 700	81, 150 95, 400 57, 700	81,150 95,400 57,700
December				2,900		2,900	2,900
January February Mareh April				2,450			1,800 2,450
May. June.							7,000
Total	7,400		7,400	72,550	182,850	255, 400	262,800

Table No. 4.— Yardage removed from Gaillard Cut, Gamboa to Pedro Miguel locks.

	(	Canal prisr	n.		Auxiliary		Grand			
Month and year.	Earth.	Rock.	Total,	Earth.	Roek.	Total.	total.			
July August	8,000	6,300	14,300°				14,300			
September. October November. December.		8,125 67,250 63,500 54,000	38, 125 138, 850 217, 835 173, 600				38, 125			
January 1920. February March April May Juno.	30, 300 24, 800 92, 800 135, 200 132, 700 120, 500	42,700 62,500 171,000 162,700 295,200 268,600	73,000 87,300 263,800 297,900 427,900 389,100							
Total	919,835	1, 201, 875	2, 121, 710	500		500	2, 122, 210			

<sup>&</sup>lt;sup>1</sup> 390 cubic yards of this amount, salvaged coal from sunken barge No. 226; 200 cubic yards of earth wasted ou bank of canal.

Table No. 5.— Yardage removed, Pedro Miguel locks to the -45-foot mean sea-level contour in the Pacific Ocean.

Mandhandana	C	anal prisn	n.		Auxiliary.		Grand	
Month and year.	Earth.	Rock.	Total.	Earth.	Rock.	Total.	total.	
July	144, 800 146, 800 46, 600 137, 500 190, 000 270, 000	18,000	46,600 137,500	132,800 139,200 56,700 6,100 25,300	10,000		305, 600 286, 000 103, 300 143, 600 190, 000 295, 300	
January February March April May June	116, 100 116, 000 73, 900 120, 000 121, 000 78, 000	4,000	116, 100 116, 000 73, 900 120, 000 125, 000 78, 000	47, 100 92, 000 61, 100 80, 000		47, 100 92, 000 61, 100 80, 000	163, 200 208, 000 135, 000 200, 000 125, 000 90, 000	
Total	1,560,700	22,000	1,582,700	652,300	10,000	662,300	2,245,000	

### DREDGING CANAL PRISM.

Dredges were at work throughout the year dredging and maintaining the Canal channel in Gatun Lake, Gaillard Cut, and the Pacific entrance, excavating a total of 3,711,810 cubic yards of construction and maintenance yardage, as shown in the following table:

Table No. 6.—Number of cubic yards removed from the Canal prism.

Location.	Construc- tion.	Mainte- nance.	Total.
Atlantie entrance. Gatun Lake. Gaillard Cut. Miraflores Lake.		7,400 2,121,710	7,400 2,121,710
Pacific entrance  Total Canal prism	17,800	1,564,900 3,604,010	1,582,700 3,711,810

At the close of the fiscal year ending June 30, 1920, there remained to be removed from the Canal prism, including siltage, slides, and original material, 2,604,100 cubic

yards of earth and 682,800 cubic yards of rock.

The following table shows the classification and location of all yardage remaining

to be removed from the Canal prism on June 30, 1920:

Table No. 7.— Yardage remaining to be removed from the Canal prism.

T. co. ion	С	onstruction	n.	N	Grand		
Location. Earth		Rock.	Total.	Earth.	Rock.	Total.	total.
Atlantic entrance				825,000 155,000		825, 000 155, 000	825,000 155,000
Gaillard Cut		25,000	25,000	566,000 175,000	450,000	1,016,000 175,000	1,041,000 175,000
Pacific entrance	47,500	82,900	130,400	835,600	124, 900	960,500	1,090,900
Total	47,500	107, 900	155, 400	2,556,600	574,900	3, 131, 500	3,286,900

It is estimated that during the present fiscal year ending June 30, 1921, the following shoaling will occur in the Canal prism:

Location.	Earth.	Rock.	Total.
Atlantic entrance. Gaillard Cut. Pacific entrance	200, 000 1, 000, 000 1, 100, 000	700,000	200,000 1,700,000 1,100,000
Total	2,300,000	700,000	3,000,000

Work under the project at Miraflores P. I. to widen the channel by cutting off the point of land on the west bank just south of Miraflores locks, was continued during the year. Forty-nine thousand one hundred cubic yards of earth and rock were removed, making the total earth and rock excavated to July 1, 1920, 486,300 cubic yards. The total estimated quantities to complete this project are 20,600 cubic yards

of earth and 124,900 cubic yards of rock.

The work of widening the channel at Paraiso P. I. to give a better and more easy approach to the north end of the Pedro Miguel locks, was completed during the year. In this work, 93,900 cubic yards of earth and rock were excavated, making a total

of 460,500 cubic yards of earth and rock removed.

Of the material removed from Gaillard Cut 18 per cent was from Culebra slide, 77 per cent from Cucaracha slide, 4 per cent from Paraiso P. I. improvement work, and 1 per cent from miscellaneous dredging.

The following table shows the distribution of all material removed from Gaillard Cut during the year, and also the grand total removed by dredges to June 30, 1920:

Table No. 8.—Distribution of material removed from Gaillard Cut.

*		Fiscal year	r.	Total to date.			
Location.	Earth.	Rcek.	Total.	Earth.	Rock.	Total.	
Gamboa Dive. Tower "R" incline Haut Obispo slide, west. Buena Vista slide, west. Buena Vista slide, east. Cascadas slide, east. Whitchouse slide, east. La Pita (lower) slide, east. Emoire slide, east. Lirio slide, east. Lirio slide, east. Lirio slide, west. Lirio slide, west. Culebra, new slide, east and west. Culebra, lod slide, east and west. Culebra, old slide, east and west. Cuerractor's Hill, north. 65-foot berm, west. Cuearacha slide, east. Contractor's Hill slide, west. Paraiso incline, east. Paraiso P. I., west. Pedro Miguel slide, east. Miscellaneous.	255, 235 633, 600 20, 800	129, 575 995, 200 73, 100	375,810	3,235 5,470 2,300 2,525 9,928 39,768 28,745 7,290 2,032,234 28,449 13,800 2,110,066 7,900 73,700 1,956	3,600 32,670 17,132 57,952 57,803 212,217 6,280 22,165,876 1,061,337 139,600 73,430 5,382,646 31,600 20,300	83, 361 83, 505 3, 235 5, 470 5, 900 35, 195 27, 060 97, 760 59, 803 240, 962 6, 280 80, 070 24, 198, 110 1, 089, 786 11, 089, 786 73, 430 7, 492, 652 39, 500 9, 210 3, 034, 638	
Total	919,835	1, 201, 875	2, 121, 710	7, 251, 940	30,051,187	37, 309, 127	

<sup>1</sup> Since Oct. 14, 1914.

Culebra slides have been fairly quiescent during the last fiscal year except during the latter part of October, 1919, when East Culebra became active. From October 16 to December 27, 1919, 272,000 cubic yards were removed from in front of this slide. The channel was maintained at all times and no delays to shipping occurred. There have been removed from Culebra slides to date 25,287,896 cubic yards of material and it is estimated that 750,000 cubic yards more will have to be removed before

the slides become permanently quiescent.

Cucaracha slide, extending from the south side of Gold Hill to the north face of Purple Rock, reaching from the Canal eastward for 2,500 feet, and covering an area of 33 acres, became active on October 3, showing a general movement and shoaling within the Canal proper between stations 1805+00 and 1815+00. On February 22 the slide again moved into the Canal and has continued for the last five months. The width and depth of the channel in front of this slide varied from time to time over this period. At one time the channel was reduced to a depth of 15 feet over a width of 60 feet. This closed the Canal to all shipping for four days (March 21 to 24, inclusive). A total of 1,628,800 cubic yards of material was removed from this area by dredges during the last fiscal year, making a total removed to date 7,492,652 cubic yards. At the close of the fiscal year channel conditions at this point were restored almost

to normal.

Drag surveys were made daily in the vicinity of all active slides, and all lumps or shoals found, which were considered a menace to navigation, were removed by the dredges before shipping was allowed to pass.

### DUMPS.

All of the spoil from Gaillard Cut and Gatun Lake was disposed of on dumps located in Gatun Lake near mile post 24, north of Mamei curve, with the exception of 43,850 cubic yards dumped in the Canal north of Gold Hill, 70,900 cubic yards deposited in the Canal by pipe-line dredges south of Cucaracha slide, and 58,200 cubic yards which were pumped through a pipe line into the Rio Grande Valley. There was a total of 1,991,160 cubic yards of material deposited on the Gamboa dumps during the year. The material excavated in the Pacific entrance, including Miraflores P. I. improve ment work, was deposited in San Juan fill; on the flats along the west bank of the

Canal: on the Arsenal fill: in the Rio Grande east diversion; on the flats north of the Arsenal fill; and in the sea dump located to the westward of the Canal entrance in Panama Bay. There were 431,100 cubic yards deposited in San Juan fill, 597,300

<sup>&</sup>lt;sup>2</sup> Prior to Oct. 14, 1914.

<sup>3</sup> Small slides and fills in the Canal.

cubic yards on flats west of Canal, 207,000 cubic yards on the Arsenal fill, 51,000 cubic yards on the flats north of the Arsenal fill, 275,000 cubic yards in the Rio Grande east diversion, and 21,300 cubic yards in the sea dumps, making a total deposit of 1,582,700 cubic yards.

### SUBAQUEOUS ROCK EXCAVATION.

During the year 1,233,875 cubic yards of hard and soft rock were removed from the Canal prism and Balboa Harbor, as follows: 120,575 cubic yards from Culebra slides, 995,200 cubic yards from Cucaracha slide, 13,900 cubic yards south of Cucaracha slide, 73,100 cubic yards from Paraiso P. I. improvement work, 18,000 cubic yards of unmined rock from Miraflores P. I. improvement work, 4,000 cubic yards from the

Pacific entrance, and 10,000 cubic yards from Balboa Inner Harbor.

Of these amounts, 33,283 cubic yards were drilled and blasted by drill boat Teredo No. 2 this fiscal year, and 30,587 cubic yards drilled and blasted at the Paraiso P. I. last year. There are still 43,770 cubic yards drilled and blasted but not dredged, 30,029 cubic yards of which are at Miraflores P. I., and 13,741 cubic yards in the Pacific entrance; 73 cubic yards of the first amount and all of the latter were drilled and blasted by drill boat Teredo No. 2 this fiscal year. There were 72,045 pounds of dynamite used during the year by the Teredo No. 2 and by dredges in dobying large rocks at Paraiso P. I. and Cucaracha slide.

The following table shows the location, feet drilled, area covered, theoretical break-

age, and cost of all rock mined by the Teredo No. 2:

Table No. 9.—Performance of drill boat "Teredo No. 2."

Month and year.	Location.	Num- ber holes.	Total feet drilled.	Powder (mmber pounds).		Break- age (cubic yards).	Cost.	Unit cost.
1919. July	Paraiso, P. I., 1900+10 to	459	5, 021	14,647	16, 524	6,695	\$9,813.15	\$1.4657
August	1901+70 W. Paraiso, P. I., 1901+70 to 1904+10 W.	582	5,805	15, 556	20, 952	7,738	11,353.71	1.4673
September	Paraiso, P. I., 1901+10 to 1905+70 W.	125	1,431	4,210	4,500	1,907	2,856.25	1.4978
	Total, Paraiso, P. 1	1,166	12,257	34,413	41,976	16,340	24,023.11	1.470
	Pacific entrance, 2088+50 to 2101+50 W.	11	55	132	396	73	163.83	2. 244
September	Pacific entrance, 2297+50 to 2299+10 E.	245	1,936	5, 227	8,820	2,580	5,790.65	2, 244
October	Pacific entrance, 2299+10 to 2300+70 E.	487	4,783	12,644	17,532	6,375	11,739.74	1.841
November	Pacific entrance, 2290+90 to 2301+50 W.	517	3,591	9,370	18,612	4,786	8,961.64	1.872
	Total, Pacific entrance.	1,260	10,365	27, 373	45,360	13,814	26,655.86	1.929
1920. March	Cucaracha slide, 1805+00 to	- 24	380	1,650	1,176	690	3,348.63	4.853
April	1809+00 E. and W. Cucaracha slide, 1806+00 to 1811+00 E. and W.	35	541	2,320	1,260	7,210	5,053.57	.700
May	Cucaracha slide, 1805+00 to 1811+00 E. and W.	19	260	1,010	1,391	7,638	5,541.92	.725
June	Cucaracha slide, station 1805+00 E. and W.	11	145	675	1,000	1,405	1,945.46	1.384
	Total, Cucaracha slide.	89	1,326	5,655	4,827	16,943	15,889.58	. 937
	Totals for year	2,515	23,948	67, 441	92,163	47,097	66, 568. 55	1.413

### MISCELLANEOUS DREDGING.

Atlantic terminals.—During the year 58,400 cubic yards of earth and 182,850 cubic yards of rock were removed from the Atlantic terminals as follows: 2,650 cubic yards of earth and 7,850 cubic yards of rock removed from the approach channel extension; 50,200 cubic yards of earth and 168,000 cubic yards of rock from the extension to the west coaling station slip; and 5,550 cubic yards of earth and 7,000 cubic yards of rock from the slips north and south of Pier No. 6.

There have been no dredging operations at Coco Solo during this fiscal year. All of this material, a total of 241,250 cubic yards, was dumped between the land

end of the east breakwater and Margarita Point.

Pacific terminals.—During the fiscal year 558,700 cubic yards of earth and 10,000 cubic yards of rock were removed from Balboa Inner Harbor, 53,500 cubic yards of earth from in front of Dock No. 6, and 40,100 cubic yards of earth from in front of

Dock No. 7.

This material was disposed of as follows: 220,400 cubic yards of earth, excavated by a pipe-line dredge with one relay, through a pipe line 4,750 feet long, were deposited on the Diablo dump "A"; 119,000 cubic yards of earth in the San Juan fill; 92,100 cubic yards of earth on the flats west of the Canal; and 220,800 cubic yards of earth and 10,000 cubic yards of rock were towed to sea and deposited on the sea dump.

### SAND AND GRAVEL PRODUCTION.

The sand and gravel necessary for construction purposes were excavated by the French ladder dredge *Marmot* in the gravel beds of the Chagres River opposite Juan Mina, about 5 miles above Gamboa. There were excavated by this dredge and delivered to the Gamboa handling plant 104,749 cubic yards of run-of-bank gravel and 15,927 cubic yards of washed sand. There were also 13,100 cubic yards of mud removed to uncover the gravel beds and 1,050 cubic yards of mud removed in front of Gamboa gravel dock. This total of 14,150 cubic yards of mud was dumped in deep water in the Chagres River. The following amounts of sand and gravel were on hand in stock at Gamboa July 1, 1920: 1,449 cubic yards of sand, 25,038 cubic yards of No. 2 gravel. 4, 296 cubic yards of No. 2 gravel. and 51,899 cubic yards of run-of-bank No. 1 gravel, 4, 296 cubic yards of No. 2 gravel, and 51,899 cubic yards of run-of-bank gravel. There were shipped during the year 39,261 cubic yards of sand, 57,093 cubic yards run-of-bank gravel, 34,992 cubic yards No. 2 gravel, making a total of 131,346 cubic yards.

### DRAINAGE.

Ditches were excavated at West Culebra and Barge Repair slides, East and West Lirio, and Cucaracha by the hydraulic graders to prevent water from standing in the areas.

### SLIDE INSPECTION AND REPORTS.

Inspections were made of all slide areas from time to time, new breaks reported, and drainage conditions noted.

### MINDI DIKES AND GROINS.

The rock and timber dikes and groins along Mindi Beach, south of Limon Bay, were maintained throughout the fiscal year. No new dikes or groins have been constructed, and only minor repairs have been necessary to those previously built.

### WATER HYACINTHS.

Regular monthly inspections were made of the waters of the Canal, Gatun Lake, and tributaries. All the scattering hyacinths were pulled, but most of those in beds

were destroyed by spraying with a solution of arsenic and soda.

During the year 2,500,000 plants of the floating variety were pulled and deposited on shore and 403,500 square yards of hyacinths were destroyed by spraying with the arsenic solution. Log booms placed in the upper reaches of the Pescado River, to keep the channel navigable for small boats, were maintained. Log booms were also placed and maintained at the mouths of the Mandingo and Chagres Rivers to keep the hyacinths from being washed into the Canal by freshets.

The floating variety has made its appearance in Canal Zone waters for the first time during this fiscal year. This is a much harder variety than the anchored kind to

control.

### SURVEYS.

The usual progress surveys were made of the dredged areas in the Canal prism, Cristobal Harbor, Gatun Lake, Gaillard Cut, and Balboa Inner Harbor. The Gatun Lake, Margarita, and Pacific sea dumps were surveyed and charted. Two topographirack, Margarita, and Facilic sea dumps were surveyed and charted. Two topographical surveys of Cucaracha slide area were made and plotted. Borings were made of the proposed area for a ferry landing at Mindi, and rock exploration surveys were made in front of the reloader wharf and along the west prism line, between stations 2286+00 and 2307+00, at Balboa. All surveys, estimates, and plans of all dredging and mining projects proposed during the year were prepared. Dump inspection in Gatun Lake section and at the Pacific and Atlantic entrances was maintained during dredging operations in those localities.

OFFICE.

All clerical work, preparation of progress records, estimates, requisitions, etc., were satisfactorily performed during the year.

### ELECTRICAL DIVISION.

The details of the operations of the electrical division during the fiscal year are covered in the report of the electrical engineer, which follows:

### ELECTRICAL DIVISION.

W. L. Hersh, Electrical Engineer.

### ORGANIZATION AND PERSONNEL.

The personnel, as recorded in last year's report, was continued throughout the year, with the exception that Mr. Carl W. Markham, who returned from military year, with the exception that Mr. Carl W. Markham, who returned from military service, was reinstated in his former position of electrical recorder effective November 1, 1919, and Mr. M. P. Benninger was assigned to other duty. The six sub-divisions into which the work of this division is divided are listed as follows:

Power and transmission system, B. R. Grier, superintendent.

Construction and maintenance, A. C. Garlington, superintendent.

Telephones and telegraphs, C. L. Bleakley, supervisor.

Railway signal system, E. C. McDonald, supervisor.

Designing and estimating, W. T. O'Connell, estimator and designer.

Office and requisitions, C. W. Markham, electrical recorder.

In this division there were 248 gold and 288 silver employees at work during the

In this division there were 248 gold and 288 silver employees at work during the last week of June, 1920. The average monthly pay roll was \$65,300.

### CHARACTER AND EXTENT OF WORK.

The duties of the electrical division remained unchanged during the year with the exception in the case of maintaining and charging of storage battery cargo handling trucks at the Cristobal terminal docks, which activity was taken over March 15, 1920, by the receiving and forwarding agent of the Panama Railroad. The principal functions comprising the activities of the electrical division are the operating and maintaining the steam and hydroelectric power plants, substations, transmission lines, and power-distribution systems; the maintenance of street, shop, dock, public building, and residence lighting systems; the maintenance of telephone, telegraph, fire alarm, and railway signal systems and railway interlocking plants, charging and maintaining of storage battery cargo handling trucks at the Pacific terminal docks and warehouses; and the installation and maintenance of such electrical equipment as required by other divisions of the Canal or other departments of the Government, and by such commercial vessels as might require this class of work while transiting the Canal.

The handling of the foregoing work required the issuing of a total of 4,785 work orders, with the attendant reports, estimates, and miscellaneous correspondence. There was prepared a total of 25 requisitions for material, which included specifications

for 2,113 items, and totaling in estimated value \$824,352.

The total expenditure of the division for the year was approximately \$1,700,000, of which 12 per cent was for work performed for other departments of the Government, 6 per cent was for exterior electrical work at Fort Clayton and Fort Davis, 9 per cent was for improvements to the power system, 10 per cent was for work performed for outside interests, 24 per cent was for work and power for the Panama Railroad, 46 per cent was for work and current for other departments of the Canal, and the balance of about 3½ per cent covered stock of materials, some equipment purchases, and work in progress awaiting completion and rendering of billing.

The work of checking and mapping of duct lines and of preparing feeder-connection diagrams of the underground distribution system, as mentioned in last year's report, was continued when other activities permitted and was advanced to a state of about

60 per cent completion by the end of June.

### POWER-SYSTEM EQUIPMENT AND IMPROVEMENTS.

The installations of major equipment of the power system as existing at the end of last year remained unchanged throughout the year. Any improvements or changes which have been undertaken have been of a secondary nature and are briefly summarized as follows:

At the Gatun hydro-electric station a small amount of preliminary work was accomplished in preparation for the installation of Unit No. 5. Part of the switchboard and oil switch equipment pertaining to this unit arrived during the later months of

the year, but the actual work of installation has not been started.

The unit proper, consisting of generator, turbine, and governor, was originally placed on a proprietary requisition from the respective manufacturers of Unit No. 4. However, on account of the high price quoted by the contractor for the turbine and governor, it was decided to cancel the original requisition covering the unit proper, and to prepare new specifications in order that same might be put out on a competitive bid basis. This required a complete set of detail drawings of the turbine and governor, which are well under way at the present time, and upon the completion of which the new requisition will be placed.

About the middle of February the 2,200-6,600 volt autotransformer of Unit No. 2 at the Gatun hydroelectric station failed in service, due to burn-out between turns of the winding. Several coils were replaced, and transformer was returned to service, only to fail again in other coils during the early part of May, making it necessary to place cablegram requisition for a complete set of new coils for this autotransformer. Awaiting the delivery of these new coils, No. 2 generator has been placed in 2,200-volt service, under which conditions it can be operated at about three-quarter capacity.

During the dry season, when Miraflores steam station was placed in service, it was found convenient to clean and paint head gates, trash racks, and valve guides at the hydroelectric station. An inspection of the bitumastic enameling on the inside of penstocks made at the same time showed that this enamel was in very good condition.

At the Miraflores steam electric station a 3-inch oil-pipe line was installed in such a manner as to pass through the ash pits for the purpose of heating the heavy grade

of fuel oil now being used.

At each of the Gatun, Cristobal, Miraflores, and Balboa substations the work of remodeling storage-battery rooms was completed. New batteries were installed at Gatun, Cristobal, and Balboa, but at Miraflores the battery was completely overhauled by using the better cell materials from the other stations.

At the Cristobal substation two 2,200-volt feeder equipments were installed, using materials recovered from the hydroelectric station. One of these feeder equipments is to be used for a distribution feeder to the new silver townsite at Mount Hope, which is under construction. The second equipment will be used for a feeder to relieve the existing feeders to the Cristobal docks, which would otherwise become overloaded when the new machine shop at the docks will be finished and placed in service.

At Gatun substation additions to equipment consisted of the installation of a 300 KVA 60,000-volt testing transformer for applying high potential tests to the transmission line, and the replacement of the 16-ton manually operated chain hoist by a 30-ton motor-operated chain hoist, this change being preparatory to the handling and installing of an 8,400 KVA 44,000-6,600-volt water-cooled transformer now requisition for this substation.

At Balboa and Cristobal substations the originally installed 800-ampere bus tie switches were replaced by switches of 1,000-ampere capacity, which were recovered from the hydroelectric station. Also at the Balboa substation there were installed two 2,200-volt feeder equipments for future needs, using materials recovered from the

hydroelectric station.

During the dry season an endeavor was made to anticipate the deterioration of porcelain insulators in service on transmission line, and as a result of these tests a total of 1,915 insulator disks were marked for removal. By the end of June 902 of these insulators had been replaced. During the dry season all transmission line steel towers and also the strain fixtures on all substation roofs were given a complete coat of gray paint.

OPERATION OF POWER SYSTEM.

The power system was operated throughout the year with an average combined generator output of 5,382,750 kilowatt hours a month, as compared with an average combined generator output of 4,725,637 kilowatt hours a month last year. There was an average of 4,608,341 kilowatt hours a month transmitted and distributed to all power consumers this year as compared with a corresponding average of 3,955,607 kilowatt hours a month last year. From the above there results a power system transmission and distribution loss of 14.4 per cent this year, as compared with a cor-

responding loss of 16.3 per cent last year.

During the dry season months of March, April, and May it was found advisable to conserve the water stored in Gatun Lake, and for this reason the hydroelectric station at Gatun was relieved of a load ranging from 3,000 to 4,000 kilowatts. For the three-month period this load was carried by the steam-power plant at Miraflores, during which period this plant generated 8,234,380 kilowatt hours, and consumed 47,040.14 barrels (42-gallon) of fuel oil. During the remaining nine months of the year the steam plant was maintained on the basis of stand-by service, for which the average rate of fuel consumption was 2,311 barrels a month, as compared with a corresponding rate of 2,515 barrels a month last year.

On the transmission line there were a total of 11 interruptions in service from all causes, as compared with a corresponding total of 49 last year. Of this total, 1 interruption was chargeable to insulator failure, as compared with 32 last year. This improvement in service is attributable to the fact that an additional insulator disk was added to all insulator strings and to the testing and weeding out of 1,475 insulator disks, as mentioned in report for last year.

The average cost of distributed power for the year was 9.421 mills a kilowatt hour, as compared with a corresponding cost of 8.097 mills last year. The average cost of distributed lighting current, including lamp renewals, was 13.277 mills a kilowatt hour this year, as compared with a corresponding cost of 12.963 mills last year. These increases in the unit costs of power and lighting current have been caused largely by the revision of the reserve for depreciation account and the fact that the Miraflores steam station was pressed into service during three months of the dry season.

The following tabulation shows, by months, the combined generator output at the Gatun and Mirafores generating stations; also the power distributed to all consumers

and the percentage of power lost between generators and the consumers:

		l generator put.	Total	System losses, including excitation.	
Month.	Gatun hydro station.	Miraflores steam station.	distributed power.	auxiliaries, transmis- sion, and transforma- tion.	
	Kilowatt	Kilowatt	Kilowatt		
1919.	hours.	hours,	hours.	Per cent.	
July	5,228,000			15.6	
August	5,422,000			15 5	
Scptember	5,125,000			15 2	
October	5,322,000			11.5	
November	5,128,000			14.75 14.75	
December	5,667,700		4, 629, 195	14.75	
1920.					
January	5,894,400			15.1	
February	5, 221, 000		4,572,610	13.7	
March	[-2, 504, 200]	[-2,928,590]	4,752,618	12.5	
April	2,132,500	3,005,350	4,597,733	12.1	
May	3,027,400	2,300,440	4,685,090	12.1	
June	5, 477, 400	208, 120	4,753,138	16.4	
Average this year			4,698,341	14.4	
Average last year			3, 955, 607	16.3	

The following tabulation shows the cost of operation and maintenance of the power system and the unit costs of power in its various stages of distribution. The unit costs are based on the net quantities of power delivered to consumers and not on the gross amounts generated.

	Totals,	Average cost per kilowatt hour.		
	1920.	This year.	Last year.	
Net power cousumption (kwh)	55, 300, 094			
Costs of operation and maintenance: Gatun hydroelectric station. Miraflores steam-electric station. Transformer substations. High-tension transmission lines. Distribution lines. Depreciation, power system Reserve for repairs.	\$48,771.71 142,100.61 82,146.13 16,797.25 31,161.59 195,000.00 5,000.00	\$0.0008819 .0025696 .0014854 .0003037 .0005634 .0035262 .000904	\$0.001053 .002381 .001597 .000528 .000502 .002022 .000000	
Total costs distributed power.  Net consumption lighting current (kwh). Cost, maintenance, lighting system, including lamp renewals. Cost of lighting current per kilo vatt hour.	13, 986, 878 \$53, 939. 83	\$0.0038564 .013277	\$0.004880 .012363	

### GATUN SPILLWAY.

The operation and maintenance of the Gatun spillway was performed by the forces of the electrical division throughout the year. There were no failures of equipment and no operating difficulties were experienced. There was a total of 153 gate operations, 126 of which were for regulation of lake level and the remaining 27 were for

inspection and miscellaneous reasons. During the dry season all railings about the spillway were cleaned and painted, and all structural steel and other metal parts were painted where necessary. The building division installed steel apron plates on four baffle piers during the dry season.

### TELEPHONE AND TELEGRAPH SYSTEMS.

The electrical division continued to operate and to maintain the telephone system and to maintain the telegraph system of the Panama Railroad Company throughout the year.

During the year 999 telephones were installed, and 636 telephones were removed, leaving a total of 3,330 telephones in service at the end of June, 1920, representing an

increase of 363 telephone installations for the year.

The average number of telephone calls during the eight-hour business day, as determined by peg count, was about 28,900 calls, representing a rate of 3,600 telephone calls an hour, as compared with corresponding figures of 22,630 calls a day and a rate

of 2,829 telephone calls an hour last year.

During the year 15,114 feet of lead-covered paper-insulated telephone cable of all sizes, varying from 5 to 200 pair, were installed, resulting in a total installation of 642,448 feet of cable in service at the end of June, 1920. On this entire cable installation there occurred 13 cases of cable trouble as compared with 12 cases of trouble last year.

The following outline of telephone statistics has been compiled in a condensed form to show the growth of telephone equipment and installations during the past year

as compared with previous years.

### Canal Zone telephone system.

	June 30, 1916.	June 30, 1917.	June 30, 1918.	June 30, 1919.	June 30, 1920.
Miles of pole line	51	43	38	36	38
Miles of underground conduit: Panama Railroad Panama Canal, occupied by Panama Railroad	212 10	212 20	212 26	212 34	212 36
Total miles of conduit	222	232	238	246	248
Miles of cable: In duct Aerial	79 9	101 2	111 2	118 2	120
Total miles of cable	88	103	113	120	122
Miles of wire: In duct. In submarine cable. In aerial cable. Bare and insulated, aerial lines.	8,282 26 470 522	9,989 55 124 508	11,457 55 124 515	11,856 55 124 526	12,960 55 124 550
Total	9,300	10,676	12,151	12,561	13,689
Miles of wire: Trunk circuits. Subscribers' circuits Telegraph circuits.	2,002 7,048 250	2,810 7,561 305	4,040 7,753 358	4,259 7,898 404	4,588 8,605 496
Total	9,300	10,676	12,151	12,561	13,689
Miles of phantom circuits	576 96	576 96	576 96	672 132	768 132
Total	672	672	672	804	900
Telephone exchanges: Panama Railroad Panama Canal Army and Navy.	16 3 10	10 3 10	9 3 10	9 3 10	10 3 9
Total	29	23	22	22	22
Tclephones: Panama Railroad. Panama Canal. Army and Navy.	1,878 104 400	2,154 110 578	2,523 114 670	2,967 114 703	3,330 120 707
Total telephones	2,382	2,842	3,307	3,784	4,157
Exchange connections daily 1	12, 165 2, 954	17, 801 3, 241	21, 816 3, 921	21,415 6,396	22,503 7,241
Total	15, 119	21,042	25,740	27,811	29,744

<sup>1</sup> Exchange and trunk connections are those handled in the four main exchanges only.

### FIRE-ALARM SYSTEM.

The work of inspecting and maintaining the fire-alarm system has been continued under the supervision of the telephone subdivision. Two new fire-alarm boxes were installed on pier No. 6 at Cristobal, and two existing fire-alarm boxes were relocated at Mount Hope. Old fire-alarm box supports were replaced by standard iron posts at two locations in Cristobal and at two locations in Balboa.

At the Balboa fire station a new loop-distributing board was installed and the terminal wiring was rearranged. In the Balboa district it was necessary to reroute about

3,000 feet of two-conductor fire-alarm cable.

There were 27 alarms turned in, and no failure of any alarm apparatus occurred during the year.

### RAILWAY-SIGNAL SYSTEM.

There were practically no changes made in the installation of railway signals during the year. Considerable maintenance work was found necessary in reinsulating splices

in underground signal cables.

There were 2,262,937 registered arm movements with 149 responsible signal failures compared to 2.084,908 arm movements and 97 responsible signal failures last year, and 2,404,176 arm movements and 131 responsible failures for the year ended June 30, 1918. There was an average of 15,187.5 arm movements per responsible signal failure compared to 21,495 last year, and 18,352 for the year ended June 30, 1918. Counting only avoidable signal failures there were 44,371 arm movements per signal failure. There were 547 train minutes delay this year compared to 181 minutes last year, and 556 minutes for the year ended June 30, 1918. There was an average delay

of 4 minutes per train for each signal failure.

There was one reported false clear aspect and one false caution aspect during the year on the entire signal system. The false clear aspect occurred September 12, 1919, on signal No. 239, due to sweating relay box and possibly leaky door on relay box. The false caution aspect occurred in December, 1919, and was caused by a broken slot to gle which was discovered by a signal maintainer who was at the signal when

The responsible and nonresponsible signal failures, arm movements, and train minutes delay for each month during the year are outlined in the following tabulation:

		Signal failure	S,			
Month.	Respo	nsible.	Noure-	Total arm movements.	Delay train minutes.	
	Avoidable.	Unavoid- able.	sponsible.			
July 1919. August September October November December	$\begin{array}{c} 1 \\ 2 \\ 2 \end{array}$	7 4 9 2 15	2 1 1 4 1 5	194, 990 197, 483 180, 014 183, 316 171, 716 180, 300	13 10 28 23 5 115	
January. 1920. February. Mirch April My. June	7 1 2 10 6 2	6 16 22 8 2 7	1	206, 248 223, 863 184, 209 195, 039 178, 921 166, 838	25 85 122 55 40 26	
Total	51	98	15	2,262,937	547	

There was an average of 45.5 train minutes delay and 12.5 responsible signal failures

In the following is tabulated an analysis of the responsible signal failures for each month of the year.

Responsible signal interruptions for fiscal year ending June 30, 1920.

	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Summary.	Per cent.
Loose nut between track wire terminals 1						1							1	0.7
Track relay disconnected account broken toggle 1. Bad relay contact 1.		• • • • •								3		3	1 6	. 7 4. 0
zlacs, etc. <sup>1</sup>	1								1				3 2	2.0 1.3
Loose connection on lead-out wire of magnet <sup>1</sup> High-resistance contacts on track relay <sup>1</sup> Broken bond wire <sup>1</sup> Open switch point <sup>1</sup> Switch box cotter broken <sup>1</sup> Broken factory splice in track <sup>1</sup> Open in track resistance unit <sup>1</sup> Open lead on track relay coils <sup>1</sup> Track relay high resistance coil <sup>1</sup> Switch box out of adjustment <sup>1</sup> Discharged or exhausted storage bat-	2					••••	2	2	10		1	2	3 10 4 2 2 2 2 2 2 3 1 2	2. 0 7. 6 2. 5 1. 3 1. 3 1. 3 2. 0 . 7
tery, carcless maintenance			1	4	3	4	1		1 2	5 5	1 3 2		4 8 18 2 2 9	2. 5 5. 2 12. 0 1. 3 1. 3 6. 0
Commutator sticting on signal motor, account of dirty brushes, etc	2			1			1			4			4	2. 5 2. 5
Open circuit, broken jumper wire on pole changer. Signal motor commutator flat					 				2			i	$\frac{2}{1}$	1.3 .7
Commutator brushes not properly adjusted Fuse blown. Open coil on 1,000-ohm repeater relay.	$\frac{2}{2}$							1				1	1 3 2	.7 2.0 1.3
Exhausted primary battery, careless maintenance.  Defective primary battery material		1	<u>i</u>	1	2	14	3	10	7	i	····	2	5 40	3. 3 27. 4
Total	17	1	6	11	5	20	13	17	24	18	8	9	149	100

<sup>&</sup>lt;sup>1</sup> Track circuit defects responsible for 30 per cent of signal failures.

There were two derailments at the interlocking plants during the year. One occurred at Diablo and the other at the pontoon bridge at Paraiso. There were also two derailments at hand-throw pipe-connected derails, one at Mount Hope passing

track and one at Tower R, Gamboa.

There were 34 reported signal failures for the year from various causes at the interlocking plants compared to 36 for last year. Of these, 24, or about 70 per cent, occurred at the pontoon bridge. Considerable delays were also reported during the month of January, 1920, in closing the bridge on account of rail wedges not dropping into place. This was caused by the bridge bumping the abutments when opening and closing, thereby throwing the apron girder about 3 to 4 inches out of alignment at the extreme end.

Due to the increased costs of labor and material, the cost of maintaining railway

signals has increased about 20 per cent over last year.

### MISCELLANEOUS ELECTRICAL WORK.

The principal items of electrical work not otherwise classified or mentioned include

the following items:

The addition of 40 lighting standards to the street-lighting systems in Canal Zone towns; the construction of underground distribution and street-lighting systems and the illumination of buildings at Fort Clayton and at Fort Davis; the starting of construction work for the distribution of lighting current to the new silver townsite at Mount Hope; the completion of underground distribution and the equipping of a small motor-driven pumping station at France Field; the extension of auxiliary power circuits for the division of fortification; the installation of a 24-panel switchboard and

seven motor generators and the necessary accessory equipment in the Coco Solo substation; the construction of duct line across reclaimed area at New Cristobal and the extension of an existing feeder cable to this area; the installation of a supplementary feeder in Balboa to relieve overloaded feeder cables; the complete rewiring, including the rewinding of all motors for the reconstructed sand and gravel handling cranes at Gamboa; the installation of switchboard, transformers, and motor equipment for the rerolling mill at Balboa; the construction of about a mile of four-cell duct line through Balboa; the placing of 7,200 feet of submarine cable for the beacon-light circuits of the lighthouse subdivision; the installation of water heaters in practically all bachelor quarters in Balboa, Ancon, Pedro Miguel, Gatun, and Cristobal for the supply department; the completion of the underground distribution system and the installation of motor-generator and switchboard equipment in machine shop at the naval air station.

The work at the electrical repair shop, exclusive of the work done in the field or which required men to leave the shop, may be briefly summarized as including the

following:

Armatures, motors, and generators rewound	307
Transformers and miscellaneous coils rewound	131
Magnetos and fan motors rewound or repaired	156
Miscellaneous electrical appliances repaired	
Switchboard and panels manufactured	
Miscellaneous other repair jobs	

The force of the electrical division handled 361 jobs of marine electric work at Cristobal and 416 jobs of the same class at Balboa; the more important items of this class of work include the complete rewiring or overhauling of and making additions to the electrical installations aboard the steamships Cristobal, Acajutla, Ansaldo San Giorgio, Salaverry, Paita, Circassian Prince, Azov, Ardmore, and the Peruvian cruiser Lima.

### MUNICIPAL ENGINEERING DIVISION.

'The details of the operations of the municipal engineering division during the fiscal year are covered in the report of the municipal engineer, which follows:

### MUNICIPAL ENGINEERING DIVISION.

### D. E. Wright, Municipal Engineer.

The municipal division performed the necessary surveys for new townsite projects, the layout and design for water, sewers, storm drainage, streets, sidewalks, and landscape work for same; the maintenance and operation of all roads, water-pumping stations, purification plants, pipe lines, and such building construction work as directly concerned this division. The principal items of new construction were the new Army post at Fort Clayton, located at Miraflores, and Fort Davis, located at Gatun; the extension of Colon, comprising the area between G and K Streets and between Seventh and Ninth Streets, an area giving 99 building lots for residential purposes for private individuals; also an area in this vicinity lying between G and K Streets and Second and Seventh Streets as a proposed addition for residential purposes for Canal employees. The development of the area between Fourteenth Street and Folks River for Panama Railroad stables, and the area between E and G Streets and Fourteenth and Fifteenth Streets for warehouse purposes; development for the area for construction of 33 houses for silver employees of the Panama Railroad on the docks and at the coal-handling plant—this involved grading, the installation of water and sewer lines, streets and sidewalks; the area developed was between Mount Hope and Colon, and designated as "Silver City"; construction of the concrete road with asphalt wearing surface for the lumber shed in Balboa to Diablo; the resurfacing and oiling of the Paraiso-Gamboa macadam road; the necessary street extension for new buildings at Fort Sherman, with the necessary water and sewer connections; the laying out and making the fill necessary for and grading the baseball park at Coco Solo; the laying of various stretches of concrete sidewalks and water connections for this point; the building of tennis courts at France Field, Gatun, and the resurfacing of tennis courts in Ancon; the construction of various sized storm sewers in the vicinity of Panama to relieve the combined sewer system origin

installed at this point, sewers ranging in size from 2½ by 2½ to 6 by 6; the demolition of the Caledonia bridge over the Panama Railroad tracks, and the putting in of a grade crossing.

### ORGANIZATION.

The municipal division is divided into three sections, viz: The Southern district, including all points in the Canal Zone from Darien south and including the city of Panama; the Northern district, comprising all points in the Canal Zone from Darien north, including the city of Colon; and the operation of purification plants, testing laboratories, and reservoirs.

### PERSONNEL.

Mr. R. C. Hardman transferred on October 15, 1919, as superintendent of the Southern district and was succeeded by Mr. George W. Green on October 16, 1919.

Mr. E. H. Chandler was relieved as superintendent of the Northern district on March 10, 1920, and was succeeded by Mr. A. C. Miller on March 11, 1920.

Mr. George C. Bunker, physiologist, continued in charge of the purification plants and laboratories.

Mr. A. G. Nolte was appointed assistant physiologist, effective February 21, 1920.

### SOUTHERN DISTRICT.

In the Southern district all pumping stations, water and sewer lines, streets, sidewalks and roads, and the upkeep of equipment were performed, as well as various items of new construction pertaining directly to appropriations made this division, besides the performance of such construction work as was requested from other divisions of The Panama Canal, the United States Army, the United States Navy, private companies and individuals, and by the Panaman Government. The report of operations of pumping stations is given in the following statement:

Pumping station.	Total	Average	Avcrage
	gallons	number	cost per
	pumped	ga lons	thousand
	during	per	gallons for
	year.	month.	pumping.
Gamboa, U. S. No. 1 Miraflores, U. S. No. 2 Balboa, U. S. No. 3. Paraiso Cucaracha (Mount Zion).	3,895,630,000 423,790,000 2,790,202,000 74,640,000 176,513,000	324,636,000 35,315,833 232,516,841 6,220,000 14,709,445	\$0.0154 .0162 .0141 .0447

In the city of Panama the usual maintenance work was performed by the municipal division on the water and sewer systems and pavements, the work of maintenance and operation in the city, including the installation of water meters on new construction. the repairs and maintenance of all work installed on previous construction, and the preparation and collection of water-rent bills for water consumed. The following table shows the quantity of water used in Panama during the fiscal year, by quarters, together with amount of water rentals:

### Consumption per quarter.

Quarter ended—	Paying connections,	Private.	Public hydrant and taps.	Total.	Daily average consumption.
Sept. 30, 1919 Dec. 31, 1919 Mar. 31, 1920. June 30, 1920. Total for year.	2, 433 2, 445 2, 457	Gallons. 155, 147, 000 149, 873, 000 176, 786, 000 166, 962, 000 648, 768, 000	Gallons. 101, 421, 000 101, 862, 000 82, 501, 000 91, 888, 000 377, 672, 000	Gallons, 256, 568, 000 251, 735, 000 259, 287, 000 258, 850, 000 1,026,440,000	Gallons, 2,850,000 2,797,000 2,880,000 2,876,000 2,850,750

### Collections.

Quarter ended	Amount collected from pri- vate con- sumers.1	Average consump- tion per pri- vate con- nection per quarter.	Average private quarterly bill,
Sept. 30, 1919. Dec. 31, 1919. Mar. 31, 1920. June 30, 1920 <sup>2</sup> .	\$40,698.60 39,343.10 46,256.80 43,622.00	Gallons. 63,741 61,189 72,305 67,953	\$16. 72 16. 17 18. 92 17. 75
Total for year	169,920.50	265, 188	69.5

Includes all bills rendered against Panaman Government for water consumed in public buildings in Panama City.
<sup>2</sup> Net amount of bills due (not yet collected).

In addition to the regular maintenance and operation in Panama City, consisting in main of the following: Hydrants inspected and flushed, 2,544; repaired, 510; leaks repaired in service connection, 35; concrete pavement replaced or repaired, 173 square yards; brick pavement repaired, 341 square yards; meters repaired and reset, 597; meters set on new contracts, 16; stoppages cleared in sewer main, 47; manholes cleaned and flushed, 18,514; concrete pavements repaired and relaid, 5,828 square yards; concrete drains constructed, 488 linear feet; eatch basins built, 5; sewer pipe for new connections laid, 231 linear feet; bricks reclaimed and cleaned, 7,450.

Under the appropriation of \$200.000 for sewer extensions and storm-sewer construction, the following work was performed: 350 feet 8-inch vitrified pipe laid between Northern Avenue and Eleventh Street; 260 linear feet of  $2\frac{1}{2}$  by  $2\frac{1}{2}$  concrete box sewer constructed on Northern Avenue to Thirteenth Street; 1,220 linear feet of  $3\frac{1}{2}$  by  $3\frac{1}{2}$ concrete box sewer from Thirteenth Street through Javillo fill to Northern Avenue; 100 linear feet of 4 by 5 concrete box sewer cross-connecting existing sewer on Northern Avenue; 880 linear feet of 4 by 4 concrete box sewer from Northern Avenue through Panama Railroad yard to Third of November and Ninetcenth Streets; 750 linear feet of 5 by 5 concrete box sewer from Third of November Street down Ninth Street to Twelfth of October Street; 350 linear feet of 15-inch concrete pipe on Twelfth of October Street, from East Nineteenth Street to the beach; 1,330 linear feet of 3 by 3 concrete box sewer paralleling Third of November Street from East Nineteenth Street and crossing the Panama Railroad at Caledonia grade crossing, thence to the intersection of Central Avenue and L Street. The following amount of work was necessary for the above-mentioned construction work:

Exeavation	eubic yards	10, 373
Backfill	do	8,890
Grading		
Concrete sidewalk rebuilt		
Reinforcing steel placed—1-inch, 5-inch, and 3-inch	ch.linear feet	30,000
Concrete placed		

the above at a total cost of \$112,177.84.

The engineering forces performed the necessary work of preparing plans, estimates, and layout for the proposed new Santo Tomas Hospital on a special work request from the Panaman Government, besides performing various miscellaneous jobs in connection with the starting of this work by forces of the Panaman Government. A work request was also placed upon this division for the construction of the concrete streets in the hospital layout and on the 1st of July a total of 7,532 square yards of concrete pavement had been laid.

### INDIVIDUALS AND COMPANIES.

The Central and South American Cable Company.—Work requests were issued by this company to the amount of \$5,615.32, covering water and sewer connections for their buildings, grading, and grass planting in the vicinity of same and the necessary patrolling of water and sewer lines supplying their reservation.

The Panama Electric Company.—The Panama Electric Company made deposits for work to be performed by the municipal forces, amounting to approximately \$5,500.

This work consisted of surfacing in their track right of way on C Street, the construc-

tion of concrete landing platform, the furnishing of asphalt for various patching jobs on their right of way, and the concreting in of their tracks for the grade crossing at the site of the old Caledonia Bridge.

WORK PERFORMED FOR DEPARTMENTS, DIVISIONS, AND OTHERS.

Under other departments and divisions of The Panama Canal miscellaneous work was performed as follows:

For the electrical division, fortification division, police and fire division, division of surveys, and subsistence department only, a miscellaneous amount of work was

performed on different work requests to the amount of \$1,512.

Building division.—A series of miscellaneous work was done amounting to approximately \$18,773, consisting, in the main, of concrete walk to scamen's home, Balboa; municipal work for three type-18 houses, Balboa; municipal work for Lodge Hall, Paraiso; municipal work for nine type-15 cottages, Pedro Miguel; construction of concrete floor in garage at Ancon; construction of floor for garage, near the National Institute, Ancon; construction of floor in two garages, Balboa district; construction of floor and approaches for garage at Pedro Miguel; municipal work for new National Catholic War Community Building. Balboa.

Supply department.—Miscellaneous work to the amount of \$10.738 was performed. The more important are as follows: Road construction to new garages; construction of roadway to Balboa store; paying in the vicinity of the new oil storehouse; the laying of 6-inch cast-iron water line for fire protection and operation of the fuel-oil handling plant, Balboa; construction of sidewalks and steps to various houses in the district; construction of clotheslines throughout the Ancon-Balboa district; installation of

air tank for the La Boca mess.

Mechanical division.—Miscellaneous work to the amount of approximately \$2,726 was performed, the more important items being the construction of sidewalks in the shops' district, the installation of an industrial railway track from their sawmill to the boiler house, and the repaying of certain areas of the shops' roads.

Health department.—Miscellaneous work was performed for this department to the amount of approximately \$600, consisting of the paving of certain drainage ditches

and filling in the vicinity of their old larvacide plant, Ancon.

Marine division.—Miscellaneous work to the amount of approximately \$877 was performed. The principal item was the construction of a garbage platform in the

vicinity of the port captain's office. Balboa.

Panama Railroad,—For the Panama Railroad Company miscellaneous work was performed to the amount of approximately \$37,100, the principal item of construction being the demolishing of the Caledonia bridge in I anama (ity and the construction of a grade crossing over the Fanama Railroad Company's tracks. This work to date is 95 per cent completed and consists of the following: 12,049 cubic yards excavated; 5,242 square yards subgraded; the placing of 3,538 square yards of concrete pavement in roadway and sidewalks; the placing of 5,389 square yards of sheet asphalt wearing surface, together with the necessary catch basins, drains, and retaining valls.

Another item of construction under this appropriation v as the raising of the roadway

to Fier No. 18. The remaining work consisted of 24 miscellaneous small jobs.

Bureau of clubs and playgrounds.—Miscellaneous work to the amount of approximately \$8,495 was performed, consisting mainly of the resurfacing of tennis courts in Ancon and Tedro Miguel, the regrading and surfacing of the Palbca basel all grounds, repairs to the running track, the placing of a sheet asphalt floor in the Palloa play shed, and the installation of water and sewer lines to the Falboa gun club.

Dredging division.—Miscellaneous work was performed for this division to the amount of \$2,678. This consisted principally of the laying of pipe lines of various sizes for supplying their relay pumps in the vicinity of Contractors Hill; 13 jobs were done on

Panama Canal orders.

United States Army.—Plans and estimates were made up and submitted giving in detail all costs and showing the location of the I acif c side of the (anal covering the proposed scheme of the Army board for permanent Army posts in this locality. Quarry Heights military headquarters roads, walks, sewer and water lines were laid. At Fmpire and Culebra, on the west side of the Canal, 35,000 linear feet of water-bound macadam road were repaired. At Corozal 1,235 linear feet of 15-inch concrete pipe were laid as a sewer line from the stables.

At the new Army post at Fort Clayton the following important items of construction were performed, the cost of this work, which is now 95 per cent completed, amounting to \$355,829.12:

Roads laid	23,779
Excavationeubic yards	17, 545
Grading. do.	
Temporary railroad track laidfeet	1,882
Storm sewers laidlinear feet	3, 240
Box culverts constructed—4 by 4do	63
Vitrif ed and concrete pipe for sever system laid—various sizesdo	6, 405
Cast-iron water pipe laid, various sizes, from 16" to 14" in diameterdo	9,080
I ead pipe for services, together vith necessary hydrants, valves, meters.do	1, 131
Sheet asphalt wearing surface laidsquare yards	13, 183
Concrete curb and gutter constructed, together with necessary catch basins	
and storm drainslinear feet	17,842
Sidewalks laid square yards.	6, 961
Concrete eave gutters placedlinear feet	3, 921

At the Cardenas River bridge a culvert was driven under the present railroad culvert to zero elevation as a sanitary measure. This culvert was  $3\frac{1}{2}$  by  $3\frac{1}{2}$  feet and 237 feet long. There were 1,070 cubic yards of excavation and fill made in connection with the sanitation in contiguous areas to the post. For the stables and wagon sheds there were 4,150 square yards of concrete floor laid and three concrete water troughs constructed. This job is 90 per cent completed.

In addition to the regular construction work outlined above for the Army, we were called on from time to time to prepare plans and estimates for various work which they desired done, and all water and sewer lines in the various posts were maintained. A mong other items of construction outside of the new post, the following are the most important: Installation of water line for the new forage sheds constructed at Corozal, which necessitated the laying of 1,584 linear feet of 6-inch cast iron water mains and the construction of the necessary fire hydrants and valves; construction of a concrete road to Quarry Heights to noncommissioned officers' quarters, consisting of the laying of 796 square yards of concrete; and the widening of the road at Quarry Heights, in which were placed 145 square yards of concrete with asphalt wearing surface.

In Corozal 5,769 square yards of sheet asphalt wearing surface were placed on the old macadam road at this point after same had been shared up. There was also installed at the engineer depot at Corozal necessary fire protection for this point, which required the laying of 970 linear feet of 6-inch cast-iron pipe and the installation of three fire

hydrants.

At Fort Amador 20,000 square yards of road were rolled and treated with oil and sand. United States Navy.—The municipal division was called on from time to time to perform miscellaneous jobs for the United States Navy, this work consisting principal division was called on from time to time to perform miscellaneous jobs for the United States Navy, this work consisting principal division was called on from time to time to perform miscellaneous jobs for the United States Navy. pally of water lines, repairs to their pumping equipment, and the various roads and sidewalks in their reservation.

The following table shows material received, expended, and on hand in the Southern

district as of July 1, 1920:

Material.	On hand June 30, 1919.	Received 1919–20.	On hand and received.	Expended 1919-20.	Balance on hand June 30, 1920.
Cement. barrels Sand. cubic yards Rock. do. Gravel do. Gravel do. Gravel storage) do. Lumber barrels Lumber (native) do. Reinforcement pounds Pipe, vitrified, 6-inch feet Pipe, vitrified, 10-inch do. Pipe, yitrified, 10-inch do. Pipe, galvanized iron, 3-inch do. Pipe, galvanized iron, 3-inch do. Pipe, galvanized iron, 3-inch do. Pipe, galvanized iron, 1-inch do.	523 † 1, 794 † 301 † 6, 739 † 32, 126 2, 653 26, 248 2, 566 4, 582 1, 791 1, 089 63 124 8, 878 1, 692 102 562 1, 156	13,928 5,408 8,629 115,950 8,554 125,962 3,356 1,818 1,075 123 143 358 1,525 1,525 1,128 1,128 1,26	14, 232\(\frac{1}{2}\) 5, 931\(\frac{1}{2}\) 1, 794\(\frac{1}{2}\) 8, 930\(\frac{1}{2}\) 6, 739 148, 976 11, 207 152, 210 5, 922 6, 400 2, 866 1, 869 1, 73 206 482 2, 934 1, 230 1, 230 1, 156 1, 156	13, 393† 5, 498 660 8, 221½ 5, 560 147, 426 11, 207 151, 344 5, 437 4, 824 1, 812 1, 038 96 1, 57 446 1, 958 1, 886 1, 170 327 448 40	839 4331 1,1343 7083 6,179 650 866 485 1,576 1,024 77 49 36 445 348 60 361 708
Pipe, galvanized iron, 2½-inchdo	179		179	40	198

Material.	On hand June 30, 1919.	Received 1919-20.	On hand and received.	Expended 1919-20.	Balance on hand June 30, 1920.
Pipe, galvanized iron, 3-inchpounds.	41		41	41	
Pipe, galvanized iron, 3\frac{1}{2}-inchdo	12		12	42	
Pipe, galvanized iron, 4-inchdo		100	144	144	
Pipe, cast iron, 4-inchdo			120	120	
Pipe, cast iron, 6-inchdo		1,596	2,256	2,196	60
Pipe, east iron, 8-inchdo	448		448	448	
Pipe, cast iron, 10-inchdo	1	456	456	456	
Pipe, cast iron, 16-inchdo		4,128	4,128	3,324	804
Oil, fuelbarrels.	489.21	1,791.10	2,280.31	2,074.89	205.42
Meters, water, ;-inch	. 152		152	151	1
Meters, water, 1-inchdo	. 65		65	31	24
Meters, water, 2-inchdo		4	4	4	
Meters, water, 3-inchdo		1	1	1	
Pipe, concreté, 15-inchfeet.	. 2,778	6,791	9,069	7,251	1,818
Pipe, concrete, 20-inchdo	720		720	720	
Pipe, concrete, 24-inchdo	. 30		30	30	
Leaditepounds.	. 58		58	58	
Jutedo	3,048		. 3,048	1,316	1,732
Leaddo		8,982	36,023	35,678	345
Hydrantseach.	. 23	50	73	51	22
Bricksdo		01 550 40	92,100	14,352	77,748
Meter partslot	\$701.95	\$1,573.42	\$2,278.37	\$1,295.85 15	\$982.5
Valves, 4-incheach.		15 60	61	40	21
Valves, 6-inchdo	- 1	5	11	6	5
Valves, 8-inchdo	. 3	2	5	5	
Valves, 10-inchdo	• 3	-	9	9	
Valves, 12-inchdoValves, 16-inchdo	1 2	4	4	2	2.
Muralitepounds.	3,010	3	3,010		3,010
Asphaltdo		579,160	914,960	890,545	24,415
Tarvia gallons		7,412	8,359	3,642	4,717
Binderdo		1,2113	1,2113	, , , , , , ,	1,2113
		2,322			1 -,2

### NORTHERN DISTRICT.

Under muncipal work chargeable to allotments made for Canal construction work, the sum of \$127,461 was spent on the following projects: Construction of the water and sewer lines for ten 12-family silver quarters at Mount Hope; the construction of sidewalks in the vicinity of Cristobal corral; grading, rolling, and installation of sewer and water lines and construction of sidewalks in the Gatun district; the laying out, grading, installing of water, sanitary and storm sewer lines, grading for and construction of concrete streets and sidewalks for the New Cristobal townsite.

The laying out and putting in of necessary municipal work for the extension of the

new townsite for Canal employees involved the following work:

Exeavation for fill of 156,719 cubic yards.

Laying of 22,400 square yards of concrete for streets.

Installation of 17 catch basins.

Placing of 1,034 square yards of concrete in slabs for gutters.

Construction of 16,074 linear feet of curb and gutters.

Placing of 6.188 square yards of sidewalks.

Digging of 200 linear feet of ditch for drainage purposes.

9,200 square yards of finished grading.

Grading and rolling 37,204 square yards of the townsite.

Construction of 29 manholes and laying of 6,214 linear feet of vitrified pipe. 8,198 linear feet of cast-iron pipe for water lines laid, 12-inch, 10-inch, 8-inch, 6-inch, and 4-inch, in addition to necessary storm sewers laid for draining townsite areas.

Under the head of "Maintenance" the sum of \$208,647 was spent for the operation and upkeep of the pump stations, reservoirs, roads, streets, sidewalks, water and sewer lines; also as a charge against maintenance, an electric booster pump of 5,000 gallons a minute capacity and driven by a 250-horsepower motor was installed. There were 21,543 square yards of macadam road repaired and oiled, in addition to the upkeep of all roadside ditches and the making of such repairs that were necessary to concrete roads in this district.

The following is a statement of water pumped at each of the pump stations during the year, giving an average monthly pumping and the average rate per 1,000 gallons:

Pumping station.	Total gallons pumped during year.	Average number of gallons per month.	Average eost per thousand gallons for pumping.
Mount Hope. Agna Clara Frijoles. Monte Lirio	2,157,686,000	179, 807, 166	\$0.019
	427,714,000	35, 642, 000	.014
	11,620,000	968, 333	.1792
	3,264,000	272, 000	.5317

The following statement shows the division cost of water delivered in the various districts of the Canal Zone during the fiscal year ended June 30, 1920:

District.	Cost per thousand gallons.	District.	Cost per thousand gallons.
Cristobal. Gatun Gamboa Paraiso.	\$0.07 .14 .08 .07	Pedro Miguel Miraflores Ancon-Balboa.	.06

The sale of water to vessels at the docks was handled as in the past. Water was delivered to ships at the rate of 50 cents per 1,000 gallons, with a minimum charge of \$3, excepting Docks No. 2 and No. 3, where the minimum charge of \$3, excepting Docks No. 2 and No. 3, where the minimum charge was 50 cents, this applying to small coastwise boats. A total of 2.215 vessels was furnished with 110,825,282 gallons of water, this being an average of 9,235,440 gallons per month.

The cost for the year of handling water amounted to \$11,527.81. In the city of Colon the sum of \$69,055 was speut on the maintenance and repairs of streets, water and sewer system, and the cost of water collections and plumbing inspection work.

The following statement shows the quantity of water used in Colon during the fiscal year, by quarters, together with the amount of water rental:

		(	Consumption	per quarte	r.		
Quarter ended — Paying connections.		Private connec- tions.	Panama Railroad reservation.	Panama Canal hos pital and quarantine	and tans		
Sept. 30, 1919. Dec. 31, 1919. Mar. 31, 1920. June 30, 1920.	984 987 992 998	Gallons, 73, 186,000 77, 739, 750 75,028, 500 80, 316, 250	Gallons. 6, 807, 750 8, 087, 006 9, 133, 750 8, 504, 250	Gallons. 9,099,750 8,451,000 9,496,500 10,477,750	+67,316,575	161,591,325	1,795,499 1,672,897
Total for year		306, 270, 500	32, 532, 750	37, 525, 000	249, 013, 550	625, 371, 500	1,737,144
Quarter ended		Amount collected from privale consumers.	Amount collected from Panaina Railroad.	Amount collected from Panama Canal.	Total revenue per quarter.	Average consumption per private connection.	Average private quarterly bill.
Sept. 30, 1919		\$29, 166, 50 28, 953, 20 30, 226, 80 32, 524, 80	\$2,012.70 2,426.10 2,740.50 2,551.80	\$2,732.70 2,536.50 2,850.00 3,141.90	\$33, 941, 90 33, 915, 80 35, 817, 30 38, 221, 50	Gallons, 74,376 78,763 75,633 80,477	\$29.64 29.33 30.40 32.59
			9, 761. 10	11, 264. 10	141, 896. 50	77,310	30.49

Approximate amount of discount to be collected...... Approximate amount to be collected from private consumers.....

WORK PERFORMED FOR DEPARTMENTS, DIVISIONS, AND OTHERS.

For other departments and divisions of The Panama Canal, the United States Army

and Navy, and outsiders, the work performed was as follows:

United States Armu.—A sum of \$329,786 was spent on the post at Fort Davis, located at Gatun. The work at this post is approximately 85 per cent completed. The principal items of work under this expenditure consisted of the necessary design work for sewer and water systems, the laying out of the streets and sidewalks, and

the location of the buildings on the post.

In preparing the site 166,204 cubic yards of earth were excavated and used for fill; 10,103 linear feet of temporary railroad track constructed; 9,448 linear feet of sewer line, varying from 24-inch to 6-inch, with the necessary manholes; 38,170 square yards of the area subgraded, graded, and rolled; 320 linear feet of concrete box culvert constructed; 16,922 linear feet of curb and gutter; 34,270 square yards of concrete road built; 9,912 linear feet of cast-iron water pipe for a distribution system laid, the pipe ranging in size from 12 inches to 6 inches; 6,782 linear feet of 15-inch. 20-inch, and 24-inch concrete pipe laid for storm sewers; 23,051 square yards of finished grading, and 1,030 square yards of grass planted, and 3,860 square yards of sidewalk laid. Under the head of Miscellaneous Work for the United States Army, the sum of

\$22,687 was spent, the principal items of work being as follows:
At Fort Sherman, 6.255 cubic yards of excavation, 4,087 cubic yards of backfill, 2,861 square yards placed in road slabs, and 492 square yards of sidewalk laid.

At France Field, 422 cubic yards of rock and coral were used in the construction of 1,596 square yards of temporary roads, 2.960 linear feet of 6-inch drain tile laid. 706 linear feet of concrete curb constructed, 12.250 square yards of grading done. 1,344 square yards of grass planted. 1.368 linear feet of 8-inch, 6-inch, and 4-inch cast-iron water pipe laid, 824 linear feet of galvanized iron pipe laid, 623 linear feet of yitrified pipe laid, and two double tennis courts with concrete foundation.

United States Navy.—For the United States Navy the sum of \$37,786 was spent.

The principal items of construction were as follows:

Placing of eave gutters around the 100-man barracks, the performing of the necessary grading and installing of sanitary ditches around officers' quarters, and the construction of 576 linear feet of sea wall, the putting in of a baseball park at Coco Solo, the placing of concrete walks. the building of a coal bin, the laying out and filling with necessary grading of a ball field at the new aviation station. The above involved the following work: 1,644 cubic yards of excavation, 1,186 cubic yards of fill, 150 cubic yards of cinders used. 12 catch basins constructed, the placing of 182 cubic yards of concrete in the coal bin and sea wall, the placing of 3,022 square yards of concrete in street pavements and sidewalks, 3.800 linear feet of concreted gutter laid. 2,500 linear feet of open drains, 95.426 square yards of area graded, the laying of 1,609 linear feet of sewer pipe and 738 linear feet of water lines.

Building division.—Under various work requests from the building division the sum of \$47,010 was spent, the principal items of construction being as follows: The placing of a 20-inch raw water line from the Mount Hope power plant to the coldstorage plant; the laying of water and sewer lines to the new shop building, Cristobal docks; the placing of concrete slab under the new stable area in Colon; the putting in of necessary road to the new incinerator plant; the installing of a water system for Dock No. 3, Colon, the work as a whole involving the following items: 4,540 cubic yards of excavation, 2.860 cubic yards of backfill, the placing of 2,620 square yards of concrete in roadway, the laying of 8.005 square yards of concrete for stable area, the laying of 764 linear feet of water lines, 2.490 linear feet of 20-inch combi-

nation sewer and storm drain, and 819 linear feet of new laterals.

Supply department.—Under work requests received from the supply department the sum of \$8.681 was spent. The principal items of construction were: Laying of fuel-oil lines to Docks Nos. 13, 14, and 16; construction of loading platform at Mount Hope; laying of a 5-inch gasoline oil line from the manifold to the gasoline oil tank. The above work involved the following: 345 cubic yards of excavation and backfill. the laying of 3.135 linear feet of 5-inch galvanized pipe; the laying of 361 linear feet of 4-inch galvanized pipe, and the placing of 153 square yards of concrete.

Bureau of clubs and playgrounds.—Under work requests from this bureau the sum of \$9,799 was spent. The principal items of construction involved were: Laying out and putting in two double tennis courts at Gatun, the resurfacing of the tennis court at Cristobal, and the construction of a pipe fence around the Colon school grounds.

Land office.—On request of the land agent wells were dug at the new town of Chagres, located in the Republic of Panama. To date, a total of 1,640 feet has been drilled, water being found in only one location.

Miscellaneous.—Under the head of Miscellaneous Work performed for The Panama Canal (P. C. No. 431), the sum of \$9.417 was expended. This covered small jobs for various divisions and departments of The Panama Canal.

Work for outsiders.—For outsiders a sum of \$791 was expended, which included the making of water and sewer connections for private parties in the city of Colon, the construction of a new curb line for Slifers' Park, Colon, and the laying out and construction of an athletic track for the Fourth of July committee at Cristobal.

Panama Railroad Company.—On authorities issued by the Panama Railroad Company, the sum of \$348,424 was spent. The principal items of work under the authority

were as follows:

Filling, grading, installation of water, sewer, and storm-sewer lines, concrete roads and sidewalks for the new silver townsite located between Mount Hope and New Cristobal, this area requiring a fill of 47,800 cubic yards; the development of block 54 as a warehouse site, which included fill, grading, water, sewer, storm sewers, streets, and railroad tracks; the development of the new residential area in Colon between Seventh and Ninth and G and K Streets, this requiring the townsite layout; the grades for fills, the installation of water, sewer, and storm-sewer lines; the laying of concrete streets and sidewalks; the construction of a concrete road from the new coldstorage plant to the Margarita-Mount Hope Road; the extension of the concrete roads to Pier No. 6; the laying out of and the putting in of the necessary water, sewer, streets, and concrete floors for the new stable area in Colon; the construction of a circulating water system from the Mount Hope filtration plant to the new cold-storage plant; the installation of water and sewer lines for the new railroad station located in the vicinity of the Army post at New Gatun, besides a miscellaneous number of small jobs at various localities.

The principal items of work involved were laying of 47,228 square yards of concrete sidewalks and streets; placing of 13,436 square yards of concrete in stable area; construction of 31,365 linear feet of concrete curb and gutter; laying of 1,104 linear feet of 20-inch and 24-inch concrete pipe; laying of 2,911 feet of 20-inch concrete pipe line for water circulation at the cold-storage plant; the rolling of 181,100 square yards for roads and building sites; the laying of 1,900 linear feet of permanent railroad track for warehouse area; the laying of 24,767 linear feet of 12-inch, 10-inch, 8-inch, 6-inch and 4-inch water lines; laying of 11,000 feet of 20-inch, 15-inch, 12-inch, 10-inch, and 6-inch sewer lines; the laying of 2,074 linear feet of 2½-inch, 2-inch, and 1-inch galvanized pipe line for water distribution in stable area and for a water

supply at Manawa plantation.

The following is a list of the more important items of stock material used on construction and maintenance work in the Northern district during the fiscal year:

•	
Cementbarrels	41,605
Graveleubic yards	33, 418
Sanddo	5, 085
Lumberfeet b. m	269, 609
Reinforcingpounds	172, 280
Concrete pipe, 15-inchlinear feet	2, 739
Pipe, 20-inchdo	4, 041
Pipe, 24-inchdo	3, 400
Leadpounds	65, 459
Vitrified sewer pipe, 6-inch, 8-inch, 10-inch, 12-inch, and 15-inch linear feet	49, 249
Galvanized pipe, various sizesdodo	24, 797
Second-hand galvanized pipe in various sizesdo	5, 839
Coal pounds	384, 100
Concrete drain tile, 4-inchfeet	1,600
Extra heavy pipe, 12-inchdo	100
Cast-iron valves, various sizes, 4 to 20 inches.	329
Fire hydrants	70
Asphaltpounds	43, 565
Tarviagallons	1, 321
Meter partsdollars	1, 513, 20
Miscellaneous cast-iron fittingsdo	1,908.28
Crude oil barrels	307. 53

### OPERATION OF WATER-PURIFICATION PLANTS AND TESTING LABORATORIES.

The following is a report of work performed by the chemical section of the testing laboratories at Miraflores during the fiscal year ended June 30, 1920:

Number samples and Michael State of the So., 1920.	
Asphalt and tarvia Asphalt wearing surface	3 34
Miscellaneous work, including samples of paints, asphaltic enamels, oils, sand, lime, alum, coal, ores, alloys, electrolytes, soap polishes, water samples, etc	271

The following is a summary of the report of work performed in connection with the operation of water-purification plants during the 11 months ended May 31, 1920:

	Agua Clara.	Mount Hope.	Miratlores.
Placed in service	Dec. 29, 1911	Feb. 23, 1914	Mar. 14, 1915. Pedro Miguel, Coro al, Ancon, Balboa, Pan- ama, Paraiso.
Source of supply	Agua Clara Reservoir.	tobal. Brazos Brook Reservoir.	(hagres River.
Rated capacity, gallons per day. Method of purification	2,500,000	8,000,000 Aeration, sedimenta- tion, rapid sand fil- tration.	15,000,000. Aeration, sedimentation rapid sand filtration.
Aeration basin: Si e	1 4 by 8	60 by 66	86 by 130. 105.
Sedimentation basin:	70.5 by 71	171 by 171	300 by 125.
Si e	10.5 350,000 10	12.25 2.500,000.	16.5. 4.500,000. 12.
Rapid sand filters		0	
Number of units	4	6	14. 5,950.
Sandinches	3024	30. 22.	30. 24.
Size of filtering material: Sand, c "ecti e si e Sand, uniformity coefficient	0.44	0.41	0.41. 1.70.
Gravel, si einches. Per cent of sand area covered by hori ontal area of troughs.	1.51 <sup>3</sup> / <sub>16</sub> to 1 <sup>3</sup> / <sub>4</sub>	1.70 ½ to 1½	\$ 10 13. 32.8.
Washing of filters: Vertical rise per minute,	19	20	21.
(inches). Gallons per square foot of sand area.	12	12.5	15.
sand area. Filter bottom, typeLoss of head:	Harrisburg, Pa	Harrisburg, Pa	Concrete false bottom.
Average initial feet	0.5	1.3	1.0.
Average final feet. Length of filter runs, hours, yearly average.	6.5. 66.8.	12.5 33.3	11.5. 37.4.
Volumes of water, average gal- lons per day:			
Raw	1,181,000	6,116,000	9,958,000. 9,792,000.
Deli ered to mains	1,160,000 1 139,000 21,000 1.77	6,014,000 5,884,000 130,000 2.15	9,792,000. 9,512,000.
Wash water Per eent of wash water	21,000	130,000	249,000.
Alum, pounds per million	370	128	2.55. 160.
gallons. Lime, pounds per million	80		
gallons. Liquid chlorine, parts per million of available chlo-	0,323	0.356	0.374.
rine. Physical and chemical characteristics of filtered water. parts per million:			
Color	4	0	0.
Free carbonic acid (CO <sub>0</sub> )	0	0 2.4	4.3.
Free carbonic acid (CO <sub>2</sub> ) Carbonate (CO <sub>3</sub> ) Alkalinity, erythrosine	0.7. 18.4	0. 38.0.	0, 49,5.
(CaCO <sub>3</sub> ). Hardness, soap (CaCO <sub>3</sub> )	37.4	37.9	48.6.
Oxygen consumed	1.73	1.2	0.6.
Chlorine (Cl)	7.2 0.16	5.2 0.09	6.7.
Chlorine (Cl) Iron (Fe) Solids total	0.16	0.09	0.03.
Nitrogen, as-			
Solids total.  Nitrozen, as— Nitri'es (NO <sub>2</sub> ).  Nitrates (NO <sub>3</sub> )  Colonies of bacteria per c. c. in water from distribution in system:	0.0005 0.016	0.0000 0.007	0,0002. 0,021.
system: Nutrient agar at 37.5° C	88	16	15.4.
B. (oli index, number per liter.	1.4	0.5	7.9.

<sup>1</sup> Aerator box.

Concrete test specimens made and broken during the fiscal year ended June 30, 1920. (Cylinders 6 inches in diameter and 12 inches high.)

	Runs sam- pled.	Cyli	nders.		Age	e of cone	rete in d	ays.	
		Made.	Broken.	7	28	90	120	180	691
Pacife roads	47	- 636	508 80	64 32	192	144	104	4	
Pacific sidewalks	28 160 69	128 416 2,356 980	348 1,596 580	84 436 176	108 572 232	96 352 100	60 216 72	20	•••••
orral, Army post 2	3 2	48 24	36 24	12	12 8	12 S	8		
Total	317	4,588	3,175	804	1,152	732	460	24	

The following table shows the status of capital cost for municipal improvements in Panama and Colon:

Items.	Panama.	Colon.
Cost of original water and sewer system within city prior to July 1, 1910	\$504, 911. 57	8314, 760. 99
Cost of original pavements within city prior to July 1, 1910	447, 966, 60 122, 165, 92	221, 070, 29 169, 581, 52
Cost of extensions to pavements prior to July 1, 1910	92, 193. 08	88, 967. 20
1, 1910.  Proportion interest on capital cost reservoirs, pumping stations, and pipe lines	77, 742. 27	43, 314. 47
prior to July 1, 1910.  Cost of maintenance water and sewer systems and pavements, and proportion	6, 216, 66	6, 125, 16
cost of maintenance reservoirs, pumping stations and pipe lines prior to July		
1, 1910 Water rental collections prior to July 1, 1910.	99, 617. 17 212, 375. 20	145, 025. 27 200, 410. 74
Capital Cost Water and sewer systems and pavements, July 1, 19201	1, 106, 926. 48	980, 222, 25
1, 19201	1, 765, 222. 58	585, 642. 89

<sup>&</sup>lt;sup>1</sup> Panaman Government pays a proportion of interest on these sums at 2 per cent based on relation of total quantity of water used in Panama and Colon to total quantity produced by system.

	PANA	MA.			
Fiscal year ending—	New construction in city.	Mainte- nance work.	Interest.	Applied in amortiza- tion of capital cost.	Water rent- als, includ- ing defi- ciencies.
June 39, 1911. June 30, 1912. June 30, 1912. June 30, 1913   June 30, 1914. June 30, 1915. June 30, 1916. June 30, 1917. June 30, 1918. June 30, 1919. June 30, 1919. June 30, 1920.  Total.	38, 745. 05 1, 815. 77 1, 505, 37 5, 034. 13	\$30, 121, 03 35, 563, 86 38, 470, 70 104, 469, 25 88, 414, 68 84, 543, 88 97, 744, 09 94, 966, 25 110, 749, 46 126, 423, 17 811, 466, 37	\$25, 759. 26 26, 532. 29 27, 468. 14 29, 086. 29 24, 505. 45 32, 094. 21 30, 404. 15 29, 632. 23 29, 166. 31 31, 574. 51 286, 222. 84	\$26, 611, 99 31, 651, 54 48, 937, 71 32, 648, 88 25, 247, 78 25, 283, 07 25, 283, 07 25, 283, 04 25, 459, 76 28, 076, 47	\$78, 467, 7 97, 772, 26 114, 876, 54 166, 204, 44 138, 167, 9 141, 921, 19 153, 431, 31 149, 881, 52 165, 375, 55 186, 074, 16
	COL	ON.			
June 30, 1911. June 30, 1912. June 30, 1912. June 30, 1913. June 30, 1914. June 30, 1915. June 30, 1916. June 30, 1917. June 30, 1918. June 30, 1919. June 30, 1920.  Total.	\$1,528,41 88,071.07 14,302.97 1,413.33 1,908,82 51,876,54 4,799,90 3,787,14 2,388,59	\$43, 111, 09 54, 470, 85 51, 161, 60 61, 542, 71 64, 125, 55 85, 171, 60 69, 774, 81 75, 490, 70 71, 887, 25 76, 386, 15 653, 122, 31	\$19, 041, 25 21, 774, 37 24, 101, 66 26, 292, 38 26, 611, 47 26, 256, 02 25, 062, 22 25, 463, 52 24, 262, 22 23, 179, 99 242, 045, 10	\$18, 019. 80 20, 994. 40 23, 553. 23 24, 388. 65 24, 513. 22 24, 569. 28 24, 868. 25 15, 992. 66 26, 137. 31 26, 177. 14	878, 870. 28 98, 541. 48 98, 816. 49 112, 223. 74 115, 250. 24 135, 996. 90 119, 705. 28 126, 946. 88 122, 286. 78 125, 723. 28 1, 134. 361. 35

Indicates credit by adjustment.

<sup>&</sup>lt;sup>1</sup> Building construction, Army post. <sup>2</sup> At Miraflores Army Post. <sup>3</sup> These cylinders were immersed in the carbolic-acid tank on Dec. 22, 1918, and were removed after a period of 457 days.

### SECTION OF METEOROLOGY AND HYDROGRAPHY.

The section of meteorology and hydrography continued to keep the permanent records of weather conditions on the Canal Zone, the hydrology of Gatun Lake watershed, and the hydrographic conditions at the Atlantic and Pacific ports of the Canal. Special investigations were carried to conclusion and report as indicated in the report of the chief hydrographer, which follows:

### SECTION OF METEOROLOGY AND HYDROGRAPHY.

### R. Z. Kirkpatrick, Chief Hydrographer.

Report on meteorological and hydrographic work and conditions for the calendar

year 1919 and the months of January to June inclusive, 1920, is submitted herewith.

The section of meteorology and hydrography continued to keep the permanent records of weather conditions on the Canal Zone, the hydrologies of the Gatun and Miraflores Lakes watershed and the Chagres River, and the hydrographic conditions at the terminals of the Canal. Special investigations and reports were concluded and reported on as outlined in the report of the chief hydrographer.

### PERSONNEL.

Mr. G. E. Matthew returned from military service and was reinstated as meterologist August 14, 1919.

Mr. G. J. Bentley, meteorologist, resigned, effective September 18, 1919. Mr. A. L. Amole, temporary clerk, was temporarily employed from June 1, 1920, to July 6, 1920.

Mr. S. Gottlich, observer, was employed on June 24, 1920, to fill a new position of observer at Cristobal.

Mr. R. L. Mitchell, hydrographer, resigned, effective June 29, 1920.

### METEOROLOGY.

General.—But slight changes were made during the year in the meteorological stations. All stations mentioned in the 1919 annual report were continued in operation and the following new ones were established:

A standard rain gage was installed at La Palma, at the mouth of the Tuira River, Province of Panama, December, 1919. It is operated by the naval radio station at

that point.

Standard rain-gage stations were also installed at Divala, Province of Chiriqui; Mariato, Province of Veraguas; and Mandinga Bay. Province of Colon. during the dry season of 1920. It is believed that these new rainfall stations will be of value in

season of 1920. It is believed that these new faithful stations will be of value in studying general isthmian storms. All these are cooperative stations and the section of meteorology and hydrography is at the expense of furnishing the rain gage only. 

\*Precipitation.\*\*—Rainfall for the calendar year 1919 was \*below\* normal at all stations in the Canal Zone and vicinity, except Cape Mala, Taboga. Chilibrillo, and Bocas del Toro. The deficiencies ranged from 4.19 inches at Juan Mina to 32.14 inches at Brazos. The rainfall was unequally distributed throughout the year, being unusually heavy in April, moderately heavy in October, and generally seasonally deficient

during the remaining months of the year. At most stations October was the month of heaviest and March the month of lightest rainfall.

Annual totals ranged from 57.59 inches at Balboa to 147.45 inches at Porto Bello. The average rainfall in the Pacific section was 63.39 inches; in the Central section 79.11 inches, and in the Atlantic section 109.89 inches. The greatest amount of precipitation recorded on any one day was 9.09 inches at Porto Bello on April 23, 1919.

Daily quantities of 4 inches or more were recorded as follows:

Station.	Date.	Rainfall.	Station.	Pate.	Rainfall.
Porto Bello. Gatun Porto Bello. Do. Taboga. Porto Bello.	Apr. 19	Inches. 5. 44 4. 21 9. 09 5. 12 4. 10 4. 78	Monte Lirio	Sept. 8-9. Oct. 8-9. Oct. 10. Oct. 22-23. Dec. 10.	Inches. 4.01 4.43 4.04 4.06 4.64

The four months' dry season rainfall for 1920 is the *lowest* on record since American occupation, in 1904, being slightly lower than the previous driest dry season of 1912. Dry season conditions continued until about the middle of May, whereas they usually end in mid-April. The rainfall for the first six months of 1920 has been below normal throughout the Zone and vicinity, the deficiency being most pronounced in the Atlantic section.

The monthly rainfall for 1919 and the first half of 1920 and the station averages are presented in Table No. 1. The maximum rainfall of record for periods of five minutes, one hour, and twenty-four hours are shown in Table No. 2. The monthly distribution of rainfall in 1919 at selected stations, compared with monthly normals, is shown graphically on Plate No. 12, and the distribution of annual rainfall in the Canal Zone is shown on Plate No. 13

is shown on Plate No. 13.

Air temperature.—The average air temperature for the year was slightly above the normal. The highest temperatures of the year occurred in general in February and April, and the lowest in March.

The means and extremes in air temperature for the calendar year 1919 are presented in the following table:

Station.	Maximum.		Mini	Annual mean.	
Balboa Heights. Gamboa Alhajuela. Gatun. Colon.	94 93	Date. Feb. 6 Apr. 11 1Feb. 14 Apr. 26 June 2	° F. 67 66 61 70 71	Date. Mar. 20 1Mar. 21 Mar. 22 1Mar. 19 Dec. 13	° F. 80.4 80.0 78.9 80.4 80.3

1 And other dates.

The maximum and minimum temperatures of record at the various stations are given below (records revised to June 30, 1920):

Station.	Ма	vimum.	Мі	nimum.	Annual average.	Years of record.
Balboa Heights. Gamhoa. Alhajuela. Gatun. Colon.	° F. 97 96 98 93 93	Date. Apr. 7, 1912 Apr. 11, 1920 Apr. 13, 1920 Apr. 18, 1920 Apr. 12, 1920	° F. 63 63 60 66 66	Date. Jan. 27,1910 Feb. 5,1917 Mar. 7,1920 Aug. 7,1912 Dec. 3,1909	89. 2 79 3 78. 9 80. 4 79. 8	14 3 9 9

1 And other dates.

Note.—The lovest temperature of record on the Isthmus since American occupation in 1904 is 59° F., recorded at Bas Obispo (near Gamboa) on February 9, 1907. The minimum temperature of record at Albajuela should read 60° F., instead of 58° F. recorded in the 1918 annual report.

The highest temperature of record on the Isthmus, 98° F., was recorded at Alhajuela on April 13, 1920.

The air temperature during the first six months of 1920 has been above normal throughout the Zone.

Monthly temperature records and other metorological data at the two principal

stations are presented in Tables Nos. 3 and 4.

Winds.—The annual wind movement in the Canal Zone for the calendar year 1919 was generally above normal. March was the month of greatest wind movement, while the least wind movement occurred generally in June and September. Northwest, north, and northeast winds prevailed at all stations, although there was a considerable percentage of southerly and variable winds during the rainy season months.

The average hourly wind movement, prevailing direction, and maximum velocities at the various stations for the calendar year 1919 are presented in the following table:

### Calendar year 1919.

Station.		e wind ent (miles hour).	Prevailing direction.	Maximum velocity.			
	1919	Annual average.	direction.	Miles.	Direction.	Date.	
Sosa Hill. Ball oa Heights. Pedro Miguel. Gamboa. Gatum. Colon	12. 7 8. 1 5. 7 5. 5 6. 2 10. 7	7, 5 5, 6 5, 0 7, 1 10, 4	Northwest do do Northeast. Northwest North	48 36 29 50 50 33	Fast Northwest West Northeast. South North	Aug. 15	

The following table, revised to June 30, 1920, gives the maximum wind velocities of record at stations in the Canal Zone.

Charles		Years		
Station.		Direction.	Date.	of record.
Sosa Hill Balbon Heights	48 59 30	Fast 1 South Northeast.	Aug. 5,1919 July 10,1909 Sept. 23,1912	3 12
Pedro Miguel Gamboa Gatun Colon	50 50 50 46	South	Sept. 26, 1919 June 17, 1919 Apr. 4, 1915	

<sup>1 48</sup> miles from the south was also recorded on Sosa Hill on June 11, 1913.

The wind movement during the first six months of 1920 was generally above normal, Sosa Hill being the only station having a slight deficiency. This station, however, has been in operation but three years.

Atmospheric pressure.—The mean atmospheric pressure for the calendar year 1919 was slightly below normal on both coasts. March was the month of highest pressure

and June the month of lowest average pressure.

Relative humidity.—The mean relative humidity of the atmosphere for the calendar year 1919 was about 83 per cent on both coasts. March and October were the months of lowest and highest humidity, respectively, on the Pacific coast; on the Atlantic coast July was the month of highest average humidity and December the month of lowest average humidity.

Cloudiness.—The average daytime cloudiness for the calendar year 1919 was above normal on the Atlantic coast and below normal on the Pacific. January, March, and December were the months of least cloudiness, while the greatest cloudiness

occurred in June and July.

Evapor tion.—The evaporation for the calendar year 1919 was the highest on record on both coasts, but over the lake surface at Gatun it was slightly below the eightvear average.

During the first six months of 1920 the evaporation was generally above normal, due to unusual length and dryness of the dry season.

Fogs.—One light and one dense fog occurred at the Pacific entrance, and three light logs occurred at the Atlantic entrance during the year 1919. The usual conditions of frequent night and early morning fogginess prevailed at interior stations during the rainy season. Practically all fogs observed lifted or were dissipated by 8.30 a. m.

Sea, Chagres River, and Gatun Loke water temperatures.—The surface temperature of the sea was slightly above normal on both coasts. Records for the calendar year

1919 are given in the table following.

### Temperature of the sea, Gatun Lake, and Chagres River, 1919,

Charles	Ŋ	faximum.	3	finimum.	1919	Annual aver- age.
Station.	° F.	Date.	° F,	Date.	mean.	
Balboa (Panama Bay) Colon (Caribbean Sea, Gamboa (Gatun Lake). Gatun <sup>1</sup> (Gatun Lake). Alhajuela <sup>1</sup> (Chagres River).	87 88	Several dates June 2 Several dates May 21 Apr. 3	80	Mar. 12 Several dates Nov. 8. Several dates Sept. 30.	80, 4 82, 4 83, 0 83, 6 79, 1	79. 9 82. 2

<sup>1</sup> From daily readings at 8 a. m. and 2 p. m. Bihourly readings at other stations.

Scismology.—Thirty-three seismic disturbances were recorded at the Balboa Heights seismological station during the fiscal year 1920. Most of these disturbances were slight tremors originating within 500 miles of the Canal Zone, and several shocks were less than 100 miles distant. Those shocks with epicenters less than 100 miles distant, though light, were sometimes felt by a number of people in the Canal Zone. Only a few tremors gave evidence of far distant origin. All seismic disturbances recorded during the year were too light to cause damage to Canal structures.

The number of seismic disturbances recorded by months during the past fiscal year are shown in the following table:

1919		1920		
Month.	Number of shoeks.	Menth.	Number ofshoeks.	
July. August. September. Oetober November. December.	1 1 2 3	January February Mareh April May June	6 6 2 3	

1 Tetal, 33.

### SPECIAL INVESTIGATIONS.

Special reports summarizing meteorological conditions in the Canal Zone, based on a study of the records, were made to you as follows:

1. Weather predictions from local barometer readings.

2. Soil temperatures in the Canal Zone.

Earthquakes in Panama up to January 1, 1920.
 Evaporation in the Canal Zone.
 Humidity and hot weather.
 Panama rainfall.

7. Panama thunderstorms.

8. Sunshine and cloudiness in the Canal Zone.

Several of these reports were published in the Monthly Weather Review, United States Weather Bureau, and The Panama Canal Record.

### PILOT BALLOON FLIGHTS.

Beginning June 1, 1920, this office has been making an 8 a, m, single theodolite balloon flight daily, except Sunday or holidays, or days of poor visibility, in cooperation with the Navy aviation field at Coco Bolo, in a study of upper air currents. Balloons are observed in azimuth and altitude angle at one minute, or approximate 200-meter intervals, with special theodolite.

The following plates and tables accompany this report: Plate No. 12. Monthly rainfall, 1919, and station averages. Plate No. 13. Distribution of rainfall in the Canal Zone, maximum, minimum, current and average years.

Table No. 1. Monthly rainfall in the Canal Zone and vicinity, and station averages.

Table No. 2. Maximum rainfall in the Canal Zone and vicinity.

Table No. 3. Monthly meteorological data. Balboa Heights, Canal Zone, year 1919.

Table No. 4. Monthly meteorological data. Colon, year 1919.

Table No. 5. Monthly evaporation in the Canal Zone.

Table No. 1.—Monthly rainfall in the Canal Zone and vicinity, 1919, 1920, and station averages,

[Values in inches.]

						ii iiici							
Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dee.	An- nual.
Balbou: 1919	0. 13 T. 1. 02	0.06 T.	T. .35 .63	6, 32 3, 54 3, 92	5. 92 2. 24 8. 08	7.75 4.42 7.32	4. 94 7. § 3	5. 96 7. 54	8.46 7.04	11.82 9.44	5. 10 9. 11	1, 13	57, 59 67, 93
Balboa Heights: 1919	. 28 T. 1. 00	T. T. .80	T. . 09 . 65	6. 43 3. 02 3. 09	5, 21 3, 31 8, 46	8.93 4.83 7.56	4.75 7.69	5, 82 7, 72	10.84 7.89	12. 11 10. 33	4. 97 10. 10	4, 17	61. 15
Miraflores: 1919	. 16 . 03 1. 73	.00 .00 1.01	.00 .02 .41	5.79 3.60 4.32	6. 07 4. 38 9. 63	4.60 9.87 8.28	8, 03	4, 02 8, 16	8, 33 9, 14	11, 54 12, 00	5, 17 10, 42	6, 36	58, 12 79, 60
1919 1920 Averace, 12 years Rio Grande:		T. .07 .67	T. .04 .32	6. 58 5. 08 4. 43	7. 37 7. 45 10. 59	3, 99 10, 02 8, 99	7.30 8.74	7. 61 8. 26	9.38	11.25	6, 02	3. 22 5. 42	63.20
1919 1920 Average, 15 years Culebra:		. 02 . 05 . 68	.00 1.30 .27	6. 44 1. 30 3. 66	6, 35 7, 38 10, 53	6. 23 11, 78 8. 96	7. 42 9. 81 7. 52	9, 95 9, 44 8, 58	10, 89 10, 40 11, 73	16, 37 12, 74 15, 62	6. 66 11. 27 7. 40	5. 35	76, 87 84, 26 74, 98
1919 1920 Averaçe, 29 years Canacho:	. 62 . 05 1. 56 1. 03	.05 .10 .65	T. .81 .56	7. 41 1. 20 3. 82 8. 52	6, 90 6, 78 10, 99 5, 08	5.73 12.08 8.73 6.77	9.37 S.89	10,00	10, 77	11, 56 13, 66	12. 26 6, 00	6. 78	87. 05 74. 75
1919 1920 Averace, 13 years Empire: 1919	. 22 1. 03	.05	. 57	1.81 3.80 7.52	9. 27 11. 07 7. 01	11.83 9.54 5.57	9.66	9, 43	10, 45 11, 04	13. 23 12. 41	i2. 87 6. 65	5, 46	87. 78 69. 63
Average, 15 years Gamboa:	. 15	. 05	.80	1, 51 3, 71 7, 02	7. 66 9. 92 5. 82	11. 01 8. 50 6. 02	8.89 6.70	9. 12 7. 37	8, 92 9, 39	13, 22 11, 72	11. 53 3. 50	4.81	80.46 62.02
Average, 37 years Juan Mina:	. 97	.10 .85 .04 .12	.21 .72 .04 1.00	1. 48 3. 69 13. 62 1. 46	7. 59 10. 70 7. 77 3. 98	7.48 9.68 5.50 5.78	10. 12	11.77 9.32	10.38	12.76 14.57	11.87 7.59	6, 54 4, 39	90.81 88.80
A verage, 9 years Alhainela: 1919 1920	.16 .72 .75 .52	1. 19 . 04 . 15	.22	4. 50 9. 06 . 83	10. 57 6. 11 4. 46	10.50 6.87 11.16	9, 66 13, 46	11.63 8.11	12. 07 9. 35	14. 81 15. 46	12, 42 9, 79	4. 70 2. 44	92,99
Average, 20 years Vigia: 1919 1920 Average, 11 years	.93 .24	.00	.47	3.80 10.02 .64	11, 92 4, 30 6, 07	7. 07 10. 23	12.49	12.30 7.82	11. 58 11. 96	14. 08 12. 01	14. 13 5. 99	5. 77 1. 82 4. 34	100.53 75.85 102.72
1919	1.61 .31 1.89	1.51 .52 .25 2.18	.39 .17 .05 .57	3, 82 10, 07 . 06 5, 15	8, 28 4, 02 11, 47	12, 91 5, 85 10, 20 9, 69	12.35 10.50 9.92	12, 23 10, 19 10, 26	13. 03 13. 50 11. 34	15, 86 18, 92 16, 28	9, 50 15, 74	5.92	95. 33
Average, 18 years Triuidad: 1919 1920 Average, 12 years	2,47	.34 .40 2,51	.38 .94 1.90	6.34 1.13 5.10	7. 28 9. 31 13. 03	12.30 10.63 10.32	5. 67	6, 78	8. 44 11. 00	15.85 14.60	7. 56	5, 64	79. 05 105, 17
Monte Lirio: 1919	4. 03 .37 2. 86	1. 15 . 71 3. 12	. 59 . 78 2, 22	11. 66 . 08 5. 75	5. 20 6. 34 12, 50	8. 16 7. 86 12. 30	9.37	10, 17 11, 73	15. 48 13. 04	15.84 16.72	9. 09	7. 73 8. 78	98, 47
Gatun: 1919 1920 Average, 15 years Brazos Brook:	1.42 .71 3.09	.54 1.00 2.68	.59 .71 2.07	12. 04 . 14 6. 01	7, 16 2, 65 13, 92	12.54 7.38 12.62	7. 86 11. 68	9, 07 13, 99	8, 42 10, 05	17. 46 16. 56	7. 19 19. 64	6, 62	90, 91
1919	2.48 .30 3.13	.70 .56 3.05	.73 .90 2,10	12, 48 . 35 5, 61	8, 71 4, 99 13, 32	11.70 7.96 14.40	9. 28 15. 02	11. 10 14. 45	10, 55 12, 24	20, 65 17, 24	5. 22 21. 17	6. 79	100, 39
1919	1.82 .51 3.81	.36 .54 1.65	1.08 1.59	10, 95 1, 72 4, 35	6. 95 5. 48 12, 60	12, 08 13, 29 13, 35	13. 60	6, 77 14, 83	11.71	21, 94 15, 03	6, 63	7. 37	100, 82 128, 48 147, 45
1919	4.31 2.52 6.47	1.58 1.61 3.57	1, 18 1, 07 2, 14	30. 21 2. 67 8. 50	13. 86 5. 05 17. 06	0. 01 0. 17 5. 23	24. 23 18. 84	17. 76 19. 08	14. 37	15.71 12.98	7. 74 27. 35	6. 46	163. 51

NOTE.—Station averages do not include 1920 records.

TABLE No. 2 .- Maximum rainfall in the Canal Zone and vicinity, Oct. 1, 1905, to June 30, 1920.

	Maximum rainfall, inches.											
Stations.	5	minutes.		1 hour.		24 hours.1						
	Inches.	Date.	Inches.	Date.	Inches.	Date.						
Balboa (June 10, 1906). Balboa Heights (Oct. 1, 1905) 2. Mirafores (June 19, 1914). Pedro Miguel (Jan. 1, 1908). Rio Grande (Dec. 29, 1905). Empire (July 18, 1906). Gamboa (Nov. 18, 1905). Alhajuela (Mar. 31, 1907). Gatun (Oct. 1, 1905).	.60	May 12,1912 Aug. 7,1908 Sept. 6,1917 Nov. 11,1908 July 24,1908 July 25,1906 Oct. 21,1918 July 27,1908 July 20,1909 July 20,1909 July 20,1909 Aug. 3,1912 Aug. 12,1914	4.14 4.19 3.32 4.19 4.72	June 2,1906 Oct. 9,1911 Sept. 6,1917 do Nov. 20,1917 Oct. 21,1918 May 11,1911 July 8,1915 Aug. 12,1914	7. 57 7. 23 4. 75 5. 45 8. 24 6. 15 6. 56 8. 19 10. 48	Nov. 16–17, 1906 May 12–13, 1912 Sept. 6, 1917 Nov. 19–20, 1917 Do. Dec. 3, 1906 <sup>3</sup> Dec. 2–3, 1906 <sup>3</sup> Do. Do.						
Bohio (Oct. 1, 1905) 4	. 67 . 64 6 2. 45	June 16, 1909 Aug. 25, 1909 Nev. 29, 1911	4.51 4.90 4.53	Aug. 7, 1908 Oct. 8, 1909 Nov. 29, 1911	8. 85 8. 53 10. 86	Aug. 7-8, 1908 Dec. 2-3, 1908 Dec. 28-29, 1909						

Maximum fall in 24 consecutive hours.
 Formerly Ancon. Station moved to Balboa Heights Oct. 1, 1914.
 No automatic record on this date. Total for 24 hours ending at noon.
 Station closed January, 1912.
 Station closed Ang. 31, 1914, and reopened in December, 1918.
 Approximate. Antomatic record indistinct, due to unusually excessive rate of fall.

Note.—Dates in parenthesis opposite station names refer to installation of automatic register.

Table No. 3.—Monthly meteorological data, year 1919, Balboa Heights, Canal Zone.

	pres	pheric sure hes).				Air ten	peratu	re (°F.)	•			humidity
	Station.1	Sea level.	Monthly mean.	Maximum.	Date.	Mean maximum.	Minimum.	Date.	Mean minimum.	Maximum daily Range.	Mean wet ther- mometer.	Mean relative h
January February March April May June July September October November December Year	29,720 29,748 29,751 29,708 29,699 29,690 29,714 29,730 29,712 29,708 29,724 29,734	29, 841 29, 870 29, 872 29, 828 29, 820 29, 812 29, 834 29, 851 29, 834 29, 830 29, 846 29, 856	79. 8 81. 4 80. 8 81. 6 81. 2 80. 6 80. 6 81. 4 79. 7 79. 1 79. 8 80. 4	90 94 92 93 92 90 91 92 90 90 90 92	2 6 16 3 4 3 14 4 6 21 12 8	87. 6 89. 4 88. 9 88. 4 86. 8 86. 8 87. 9 85. 1 85. 8 86. 0 87. 5	70 70 67 72 73 72 71 72 71 70 70 68	6 14 20 6 1 18 8 20 27 6 14 13	72. 1 73. 5 72. 8 74. 9 75. 6 74. 9 74. 4 74. 9 73. 6 73. 6 72. 2 72. 1	19 20 23 18 17 16 17 18 18 18 19	72. 2 72. 8 72. 0 75. 1 76. 8 76. 0 75. 5 75. 6 74. 8 74. 7 73. 8 73. 0	77. 8 74. 4 72. 9 80. 1 86. 0 86. 2 85. 6 85. 1 86. 9 87. 1 84. 5 80. 8

<sup>1</sup> Elevation of baremeter 118 feet above mean sea level.

<sup>&</sup>lt;sup>2</sup> February.

<sup>3</sup> March.

Table No. 3.—Monthly meteorological data, year 1919, Balboa Heights, Canal Zone—Continued.

	Pr	ecipitati (inches)	io11 •			Wind.			Number of days.				
	Monthly total.	Normal.	Rainy days.	Prevailing direction.	Total movement (miles).	Miles per hour.	Direction.	Pate.	Clear.	Part cloudy.	Cloudy.	Thunderstorms.	Average cloudi- ness.2
January February Mareh April May June July August September October November December	0. 28 T. T. 6. 43 5. 21 8. 93 4. 75 5. 82 10. 84 12. 11 4. 97 1. 81	1.00 .80 .65 3.09 8.46 7.56 7.69 7.72 7.89 10.33 10.10 4.17	7 0 0 15 23 19 15 22 21 22 17	N. N. N. NW. NW. NW. NW. NW. NW. NW. NW.	8,573 7,867 10,196 6,537 4,807 4,521 5,150 4,884 4,090 4,516 4,327 5,622	32 32 36 31 30 28 25 32 22 31 32 25	NW. N. NW. NW. S. SW. S. SW. S. NE. NW.	10 19 7 26 15 16 28 5 13 24 21	8 5 16 0 0 0 0 0 0 1 1 2	22 23 15 18 20 12 16 21 14 11 19 27	1 0 0 12 11 18 15 10 16 19 10	0 0 0 8 9 15 15 15 15 16 1	4.5 4.8 4.1 7.2 7.2 7.7 7.4 7.0 7.5 7.6 6.8 5.5
Year	61.15	69.46	173	NW.	71,090	36	NW.	5 7	33	218	114	94	6.4

<sup>&</sup>lt;sup>1</sup> Average for 22 years' record.

Table No. 4.—Monthly meteorological data, year 1919, Colon, R. P.

	pres	sphe <b>rie</b> sure hes).			,	Air tem	peratur	e (°F.).		-		humidity y).
Month.	Station.1	Sea level.	Monthly mean.	Maximum.	Date.	Mean maximum.	Minimum.	Date.	Mean minimum.	Maximum daily range.	Mean wet thermometer.	Mean relative hun (bihourly).
January. February March April. May. June July August September October. November December Year	29, 822 29, 856 29, 861 29, 810 29, 786 29, 777 29, 804 29, 818 29, 792 29, 790 29, 806 29, 826 29, 812	29, 860 29, 892 29, 878 29, 847 29, 822 29, 814 29, 856 29, 830 29, 826 29, 844 29, 864 29, 850	79. 6 80. 1 79. 6 80. 0 82. 0 80. 7 80. 2 80. 8 80. 6 80. 1 80. 0 80. 4	84 84 84 86 92 92 92 87 87 87 90 90 89 87	8 26 30 18 18 18 2 6 24 12 29 8 10	82. 5 82. 6 82. 5 83. 1 86. 3 85. 2 84. 2 85. 1 85. 2 84. 6 85. 1	74 72 73 73 75 71 73 73 73 73 71 72 71	12 14 28 26 23 26 23 26 8 21 4 4 8	76. 7 77. 6 76. 8 77. 0 76. 2 76. 3 76. 5 75. 2 75. 0 75. 5 75. 8	9 10 10 9 14 14 12 13 14 16 17 15	74.6 75.2 74.4 77.2 77.5 77.5 77.5 77.0 76.1 76.4 75.5 75.2	80. 1 81. 3 79. 4 85. 7 85. 6 86. 9 87. 0 85. 2 84. 2 84. 4 80. 6 78. 6

 $<sup>^{\</sup>rm 1}$  Flevation of barometer 36 feet above mean sea level.  $^{\rm 2}$  June.  $^{\rm 3}$  December.

8847-20-7

<sup>&</sup>lt;sup>2</sup> Tenths of sky obscured during daytime.

Table No. 4.—Monthly meteorological data, year 1919, Colon, R. P.—Continued.

	Precipi	tation (ir	iches).		\	Vind.			N	umber	of day	s.	64
	.I.			diree-	movement iiles).	Maxi	mum ity.	veloe-		у.		ms.	diness
Month.	ly tota	1.1	days.		move (miles).	per r.	ion.			eloud		erstor	c clou
	Monthly total.	Normal.	Rainy	Prevailing tion.	Total (n	Miles	Direction.	Date.	Clear.	Partly eloudy	Cloudy	Thunderstorms.	Average cloudiness,2
January February	1.82	3.81 1.65	20 10	N.	11, 359 9, 526	32 28	N. N.	12 27	3	20 15	8 10	0 0	5.8 6.5
March April May	. 61 10. 95 6, 95	1.59 4.35 12.60	13 23 18	N. N. SE.	9,526 11,828 8,839 5,908	28 27 27	NE. W. NE.	18 26 23	5 1 0	15 7 8	11 22 23	0 6 16	6.3 8.3 8.4
June	12.08 13.60 6.77	13.35 15.97 14.83	24 28 22	N. W.	4,752 6,620 6,823	24 32 28	E. N. S.	14 21	0	8 5 4 10	25 27 21	14 18 7	8.7
September October November	11.74 21.94 6,63	12.65 15.03 21.04	20 26 22	SE. SE. N.	4,928 5,822 7,197	27 30 33	N. W.	7 22 28	1 1 2	13 12 15	16 18 13	8 14 3	8.2 7.7 8.0 6.9
December	7.37	11.61	23	NE.	9,778	30	NE.	30	6	20	5	0	5.8
Year	100.82	128, 48	249	N.	93,380	33	N.	3 28	22	144	199	86	7.4

<sup>3</sup> November.

Table No. 5.—Monthly evaporation in Canal Zone, years 1919 and 1920. [Values in inches.]

	В	alboa Heigl	hţs.		Gațun.		Colon.1		
Month.	1919	1920	Average 12 years.	1919	1920	Average 9 years.	1919	Average 11 years.	
anuary. Gebruary March April May une uly August September October Oceember	7, 970 7, 704 9, 813 5, 478 3, 737 3, 063 3, 228 3, 838 2, 807 2, 881 3, 979 5, 275	8, 330 8, 380 9, 531 6, 548 6, 121 3, 379	6. 005 6. 393 7. 652 5. 445 3. 536 2. 994 3. 260 3. 251 3. 163 3. 276 3. 146 4. 694	5. 874 5. 876 7. 253 4. 625 5. 359 4. 110 3. 842 4. 709 4. 592 3. 863 4. 677 4. 868	6. 798 6. 756 6. 920 7. 257 6. 247 4. 248	5. 970 6. 248 7. 481 6. 404 5. 127 4. 250 4. 407 4. 426 4. 474 4. 160 3. 783 4. 970	5. 476 6. 230 9. 020 6. 156 5. 079 3. 721 3. 060 3. 840 3. 376 3. 431 4. 374 5. 399	6. 05. 6. 32. 7. 36. 6. 00. 3. 96 3. 27. 3. 11. 3. 17. 3. 19. 3. 29. 3. 13. 4. 52.	
Year	59.773		52. 815	59. 648		61.700	59.162	53, 40	

<sup>&</sup>lt;sup>1</sup> Evaporation records discontinued Jan. 1, 1920.

Note.—Averages do not include the year 1920.

#### HYDROGRAPHY.

The same hydrographic stations were operated as last year.

Tidal conditions.—Automatic tide registers were continued in operation at Balboa and Colon. The tidal extremes of record for the calendar year 1919 at these stations are given in the following table:

01-11	Maxim	um high water.	Extreme	low water.	Maximu	m range.1	Minimum range.		
Sţaţion.	Feet.	Dațe.	Feet.	Dațe.	Feet.	Date.	Feet.	Dațe.	
Balboa	10.6	Sept. 13 Oct. 11-12 Dec. 8	*	Apr. 2 June 4	20.7	Apr. 2 Jan. 12 Dec. 8	6.2	Jan. 26. Feb. 25. Several daţes.	

<sup>&</sup>lt;sup>1</sup> For consecutive tides.

<sup>&</sup>lt;sup>1</sup> Average for 49 years record. 
<sup>2</sup> Tenths of sky obscured during daytime.

<sup>&</sup>lt;sup>2</sup> One or more phases of a tide are often absent at Colon.

Elevations referred to zero of gage rods, approximately mean sea level.

Monthly tide data at Balboa and Colon for the calendar year 1919 are presented in

Table No. 6.

Chagres River.—The outstanding feature of the Chagres River discharge was the low yield of the watershed. The 18 months' period, December, 1918-June 1, 1920, showed the lowest yield of any 18 months' period since January, 1905–July 1, 1906, the previous low record since 1902, the date of beginning of careful, continuous gagings. Inasmuch as the Chagres River usually furnishes about 40 per cent of Gatun Lake's annual total yield, it is apparent that the water supply of Gatun Lake was affected by this deficit in 1919.

The three lowest periods of 18 months' discharge of record in order of minimum

ow are:		Discharge in cubic foot-seconds.	
	Period.		
1.	Jan. 1, 1905, to July 1, 1906	1,286	
	Dec. 1, 1918, to June 1, 1920		
3.	Jan. 1, 1911, to July 1, 1912		
	In order of minimum flow for 12 n	nonths the order is:	
1.	Jan. 1, 1905, to Jan. 1, 1906		
	Jan. 1, 1919, to Jan. 1, 1920		
	Tan 1 1912 to Jan 1 1913		

April, 1920, was the month of minimum average flow of record, 304 cubic footseconds in comparison with the previous minimum of 371 cubic foot-seconds in

April, 1912.

The mean discharge of the Chagres River at Alhajuela for the calendar year 1919 was 1,886 cubic foot-seconds, or 28 per cent below normal, against an 18-year average of 2,616 cubic foot-seconds. The Chagres River furnished 36 per cent of the Gatun Lake total yield. The maximum monthly discharge at Alhajuela was 2,996 cubic foot-seconds in September, and the minimum monthly discharge was 469 cubic foot-seconds in March. (See Table 8 and Plates Nos. 14 and 15 for data on discharge by months.) The maximum momentary discharge at Alhajuela during the calendar year 1919 was 23,800 cubic foot-seconds at elevation 101.3 during the flood of November 5, 1919, and the minimum momentary discharge was 333 cubic foot-seconds on March 24, 25, and 26, 1919. On May 11, 1920, the minimum momentary discharge was 231 cubic footseconds, the lowest of record.

Freshets.—There were nine freshets in the Chagres River during the calendar year 1919, with a rise of 5 feet or more at Alhajuela, occurring during the period from April

15 to November 5. Data on the principal freshets for the calendar year 1919 and January 1 to July 1, 1920, are given in Table No. 7.

Flood warnings.—Vigia, Alhajuela, and Gatuncillo were continued as flood-warning stations. Timely warnings of all large freshets were issued to the Chagres River plansitions. tation management, the port captains, and other interests affected by flood conditions.

Current-meter gagings.—Fifty-four gagings were made at the Calle Larga gaging station (Chagres River) during the calendar year 1919, covering a range from elevation 96.20 to 107.40. Nine current-meter gagings were made during the year on each of

the upper tributaries, the Pequeni, the Chagres, and the La Puente.

Gatun Lake.—The Gatun Lake watershed total yield for the calendar year 1919 was 17 per cent below normal, amounting to 5,225 cubic foot-seconds, against a nine-year average of 6,267 cubic foot-seconds. (See Tables 9 and 10, respectively, for monthly hydrology for Gatun Lake and Gatun Lake watershed for 1919.) The maximum monthly total yield was 10,531 cubic foot-seconds in October. The minimum monthly total yield was 952 cubic foot-seconds in March. The total yield of the watershed amounted to 164.78 billion cubic feet, accounted for as follows:

У ВЩОТ	cubic feet.
Run-off above Alhajuela (36 per cent)	. 59. 45
Yield from land area below Alhajuela (44 per cent)	. 71.86
Direct rainfall on lake surface (20 per cent)	. 33. 47
Total (100 per cent)	164.78
The uses and disposition of this water supply were:	cubic feet.
Evaporation from lake surface (14 per cent)	22, 108
Gatun Lake lockages (11 per cent).	18, 246
Hydroelectric power (28 per cent)	46, 340
Spillway discharge (46 per cent).	76,044
Leakage and miscellaneous uses (1 per cent)	1.819
Increased storage	. 230
Total (100 per cent)	164. 787

With no inflow, the various uses and losses during the calendar year 1919 would have lowered Gatun Lake as follows:

Canal lockages, from elevation 87 to elevation 83.

Hydroelectric power from elevation 87 to elevation 76.5.

Spillway waste, from elevation 87 to elevation 68.8. Evaporation, from elevation 87 to elevation 82.2. Total losses, from elevation 87 to elevation 41.6.

With no losses from Gatun Lake the various sources of inflow would have raised the lake as follows:

Direct rainfall on lake surface, from elevation 79.7 to elevation 87. Run-off from land surface, from elevation 51.2 to elevation 87.

Total net yield, from elevation 40 to elevation 87.

The total net yield was equal to 81 per cent of the capacity of Gatun Lake. Storage depletion, 1920 dry season, Gatun Lake.—The 1920 dry season began about December 16, 1919, and the dry-season weather continued to May 13, 1920, being the worst season for water supply since American occupation in 1904. Inflow of average seasonal amounts did not begin until June 1. Plate No. 19 graphically shows a study of how the Gatan Lake was affected, with comparisons with other years.

In order to conserve water supply, about 50 per cent of the usual output at the hydroelectric plant was generated at the Miraflores plant, from March 3 to June 3, 1920. The ratio of water expended in making hydroelectric power and lockages in the calendar year 1919 was 2.54 to 1; in 1920 dry season, 1.87 to 1. There were 20.46 billion cubic feet of storage depletion between January 1 and May 28, 1920, the lake falling to elevation 81.77. Had the hydroelectric plant continued at its usual rate of water economytion throughout the 1020 dry season the Catyn Lake would have of water consumption throughout the 1920 dry season, the Gatun Lake would have fallen to elevation 80.55, which allows a depth of water in Gaillard Cut of 40.55 feet. It is apparent from my study and curves, published in the 1918 annual report, that when the Gatun hydroelectric plant has reached its complete development, at least a partial switch of power generation to the Miraflores plant will have to be made during many future dry seasons.

#### BRANCH HYDROGRAPHIC OFFICE, CRISTOBAL.

The branch hydrographic office, under the port captain's office at Cristobal, is operated in connection with the Cristobal meteorological station. Corrections of navigational charts, barometers, and chronometers were made. Value of charts, books, and other aids to navigation sold or issued for official use during the fiscal year of 1919-20 amounted to \$3.668.20, an increase of 35 per cent over the previous fiscal There was an average of eight ship's chronometers being checked daily for time corrections throughout the year.

#### SPECIAL INVESTIGATIONS.

Special reports were made to you on studies or investigations during the year as below:

1. Mean tide levels—Balboa and Cristobal.

2. Comparative tide records—Balboa and Taboga.

3. Surges in Gaillard Cut from lockages at Pedro Miguel.

4. Miraflores Lake currents affecting navigation.

A summary of the latter report is as follows:

(a) The general drift of the currents due to lockages, spillway operations, and dry season prevailing winds is toward Miraflores locks. Southbound ships will experience more difficulty in navigating Miraflores Lake than will northbound vessels.

(b) Northbound vessels in either chamber of Miraflores locks should experience no important navigating difficulties on account of spillway gate No. 8 operating at 52-foot opening.

(c) It is not definitely known whether or not southbound vessels can safely enter Miraflores locks with spillway gate No. 8 discharging through a 5.2-foot opening. It is suggested that careful tests be made to

(d) Prevailing northwesterly winds and lockage surges cause currents in Miraflores lock west forebay to set up toward the lock gates, followed by a back surge when the current strikes the lock gates. This back surge sometimes catches the bow of an incoming vessel, deflecting its course toward the west wing wall. Neither the time nor the magnitude of this back surge can be predicted. Making fast the bow center wall towing line as soon as possible after the vessel comes alongside is suggested as a precautionary measure to prevent this deflecting tendency.

The following tables and plates accompany the hydrographic section of this report:

Table No. 6. Tidal conditions, calendar year 1919.
Table No. 7. Principal freshets in the Chagres River, calendar year 1919 and January to June, inclusive, 1920.

Table No. 8. Monthly discharge, Chagres River at Alhajuela, 1919. Table No. 9. Monthly hydrology, Gatun Lake, 1919. Table No. 10. Hydrology of Gatun Lake watershed, 1919. Table No. 11. Hydrology of Miraflores Lake watershed, 1919.

Plate 14. Chagres River drainage basin; mean monthly discharge at Alhajuela; year 1919, dry season 1920, and 18-year average.

Plate 15. Chagres River drainage basin; massed curves-discharge at Alhajuela;

maximum, minimum, current and average years.

Plate 16. Operating uses of Gatun Lake water supply; year 1919, dry season 1920.

Plate 17. Gatun Lake watershed; yields and losses: massed curves, year 1920. Plate 18. Gatun Lake watershed; total yields; year 1919, dry season 1920 and 9-year

Plate 19. Gatun Lake watershed; comparative dry season hydrographs and curves; monthly uses and losses, dry seasons 1917, 1918, 1919, 1920.

Table No. 6.—Tidal conditions, calendar year 1919.

[Elevations in feet referred to zero of rod, approximately mean sea level.]

#### PACIFIC COAST-BALBOA CANAL ZONE.

Menth.	Maxi- mum high water.	Date.	Ex- treme low water.	Date.	Mavi- mum range.	Date.	Mini- mum range.	Date.	Aver- ace daily range.	Monthly mean tide level.
January. February March. April May. June July August. September October November December.	8.3 9.1 9.8 9.9 10.3 9.5 9.1 9.5 10.6 10.6 10.6	18 4 5 30 1 29 28 15 13 11-12 9	- 9.1 - 9.3 -10.2 -10.9 -10.3 - 9.1 - 8.8 - 8.1 - 9.9 - 9.7 - 9.7	18 3 4 2 1 29 28 28 56 12–13 11 9	17.4 18.3 19.8 20.7 20.6 18.8 17.9 17.4 19.2 20.5 50.3 19.9	18 3-4 4 2 1 1-28 15 13 11 9	6.2 6.2 6.7 7.4 9.2 8.3 6.9 6.4 6.3 6.6 7.3 8.4	26 25 26 24 10-23 9 8 6 5 4 2	12.6 12.8 13.1 13.3 13.1 12.9 13.0 12.9 12.7 12.7 12.7	+0.452 +.206 +.114 +.322 +.738 +.817 +.833 +.928 +.994 +1.054 +.904 +.904
Year	10.6	Sept. 13 Oct. 10-11 Nov. 9	}-10.9	Apr. 2	20.7	Apr. 2	6.2	{Jan. 26 Feb. 25	} 12.9	+ .694

#### ATLANTIC COAST-CRISTOBAL, CANAL ZONE.

							1		
1.53	15	-0.51	1	1.83	12	0.21	24-26	0.89	+0.250
.87	1	79	8	1.46	10	. 20	22-27	. 70	+ .054
.97	10	<b>-</b> . 53	8	1.47	10			. 69	+ .150
1.23	29	54							+ .270
			30-31						+ .220
			4						+ .205
									+ .220
									+ .284
									+ .257
									+ .417
									+ .386
1.70	8	54	23	1.83	8	. 22	9	.90	+ .342
1.70	Dec. 8	71	June 4	1.83	{Jan. 12 {Dec. 8	} .20	Several dates.	} .82	+ .255
	.87 .97 1.23 1.36 1.26 1.18 1.23 1.28 1.44 1.34 1.70	.87 1 .97 10 1.23 29 1.36 2 1.26 24 1.18 25 1.23 19 1.23 19 1.24 15 1.34 21 1.70 8	.87 179 .97 1053 1.23 2954 1.36 265 1.26 2471 1.18 2546 1.23 1932 1.25 1738 1.44 1547 1.34 2156 1.70 854	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	.87	.87	1	.87

Table No. 7.—Principal freshets in the Chagres River for the calendar year 1919 and January to June, inclusive, 1920.

[Elevations are in feet above mean sea level.]

	Vigia.			Alhajuela.			Gatu <b>n</b> eillo.				
l'ate.	Eleva- tion of erest (feet).	Rise (feet).	Eleva- tion of crest (feet).	Rise (feet).	Hours after Vigia.	Mavi- mum dis- charge. (c. f. s.).	Eleva- tion of crest (feet).	Rise (feet).	Hours after Vigia.	Per cent of Vigia. rise.	Per cent of Alha- juela rise.
1919. Apr. 15. Apr. 23. May 9-10. May 13-11. May 23-24. June 30. Aug. 17-18. Sept. 21. Nov. 5.	138, 30 135, 80 133, 00 136, 20 135, 55 133, 40 134, 30 133, 80 137, 95	11. 2 9. 3 6. 4 9. 2 8. 4 6. 4 7. 4 6. 3 10. 4	100, 79 98, 90 96, 90 99, 35 98, 90 97, 50 98, 00 97, 80 101, 30	8.9 7.4 5.1 7.5 6.9 5.6 6.2 5.6 9.0	1433 11427 12724 1244 1444 143	21, 200 15, 750 10, 150 17, 210 15, 750 11, 790 13, 120 12, 600 23, 100	89. 72 88. 20 87. 18 88. 80 (1) 98. 18 87. 90 88. 05 90. 90	5.7 3.8 2.1 3.6 (1) 3.0 2.5 2.6 4.0	1 Let 1 2 1 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2	51 41 33 39 (1) 47 34 41 38	64 51 39 48 (1) 54 40 46 44
June 21 June 21 June 25	136.85 133.95 141.85	10.8 7.1 15.2	99.82 97.90 103.20	8.9 6.2 11.7	2 11 11 12	18,520 12,900 29,500	88.45 87.47 91.29	6. 4 4. 8 8. 6	$\binom{2\frac{1}{4}}{2\frac{3}{4}}$	59 68 57	72 77 74

<sup>&</sup>lt;sup>1</sup> Record lost.

Table No. 8.—Monthly discharge, Chagres River, at Alhajuela, calendar year 1919.

[Drainage area, 427 square miles.]

) Tanada		Discharg	Inch- water:	Per cent run-off				
Month.	Maxi- mum.	Date.	Mini- mum.	Date.	Mean.	Rain- fall.	Run- off.	to rain- fall.
January February March April May June July August September October November	4,990 986 711 21,200 17,100 11,790 9,260 13,120 12,560 9,375 23,100	12 13 12–13 15 14 30 21 18 20–21 11 5	898 521 333 375 1,140 1,239 1,151 1,217 1,783 1,613 1,503 1,320	28-29 28 24-26 8 9 21 17 5 18 30-31 18	1,285 731 469 1,581 2,348 1,887 2,060 2,049 2,996 2,512 2,455 2,186	1.99 .59 .48 16.06 9.43 8.72 16.71 13.60 14.10 13.92 9.15 4.06	3.47 1.78 1.27 4.13 6.34 4.93 5.56 5.53 7.83 6.78 6.42 5.90	174 302 265 26 67 57 33 41 56 49 70
Year18 years	23, 100 170, 000	Nov. 5 Dec. 26,1909	333 250	Mar. 24-26 Apr. 20, 1912	1,885 2,616	108.81 120.42	59.94 83.21	55 69



100 51 57

## Table No. 9.—Monthly hydrology, Gatun Lake, calendar year 1919.

[Drainage area, 1,320 square miles.]

Month.	Mean elevation above mean sea level (feet).	Operative and useful losses (c. f. s.).	Spillway discharge waste (c. f. s.).	Storage: + in- crease, - de- crease (c. f. s.).	Evaporation from lake surface (c. f. s.).	Net yield, 3+4±5 (c. f. s.).	Total yield, 6+7 (c. f. s.).
January. February. March April. May June. July August September. October November	84.85	2,023 2,004 2,093 2,052 2,055 2,083 2,110 2,149 2,102 2,139 2,098	3 0 8 26 2,053 2,025 2,584 2,377 5,807 6,436 4,547	$\begin{array}{c} -\  \   485 \\ -1,930 \\ -2,151 \\ +1,173 \\ +\  \   224 \\ +\  \   417 \\ -\  \   52 \\ -\  \   90 \\ +\  \   471 \\ +1,419 \\ +1,350 \\ \end{array}$	819 910 1,002 647 737 590 524 647 647 536 678	1,541 73 -50 3,250 4,332 4,525 4,641 4,437 8,379 9,994 7,995	2,360 984 952 3,897 5,069 5,115 5,166 5,084 9,027 10,531 8,673
December	86.99	2,348	2,927	+ 7	687 701	4,939	5,626

### Table No. 10.—Hydrology of Gatun Lake watershed, calendar year 1919.

[Drainage area, 1,32	· • • • • • • • • • • • • • • • • • • •	····		2,300
Pedro Miguel lockages			Elevation (feet).	
Monthly mean Maximum Minimum			85. 6 87. 1 83. 7	6 Dec. 3
			Quar	ntities.
			Million cubic feet	Second- feet.
Gatun spillway, waste. Gatun spillway, leakage. Gatun locks, lockages and tests. Gatun locks, leakage. Gatun hydroelectric plant. Pedro Miguel locks, lockages and tests 1 Pedro Miguel locks, lockages and tests 1 Maintaining Mıraflores Lake through Pedro Miguel lock Pumping at Gamboa. Brazos Brook reservoir.  (a) Total outflow.  (b) Storage (plus increase, minus decrease).  (c) Net yield (a plus b).  (d) Evaporation (57.738 inches).  (e) Total yield (c plus d).  (f) Rainfall on lake (87.42 inches).  (a) Yield from land area (e minus f). Transferred into Miraflores Lake 1.	S <sup>1</sup>		. 115. 9,535. 226. 46,340. 8,710. 307. 498.8 341. 142,449. +230. 142,679. 22,107. 22,107. 161,787. 33,467. 131,319.	3 7 302.4 1 7.2 2 1,469.4 6 276.2 10.4 2 9.7 2 10.8 1
	Mean area (square miles).	Rainfall (inches).	Run-off (inches).	Percentage run-off.

165 1, 155 1, 320

Lake surface.
Land area.
Total watershed.

<sup>&</sup>lt;sup>1</sup> Transferred into Miraflores Lake.

Table No. 11.—Hydrology of Miraflores Lake watershed, calendar year 1919.

#### [Drainage area, 38.5 square miles.]

Miraflores Lake.	Elevation	n. Date.		
Monthly mean Maximum Minimum	53. 40 54. 76 51, 02	Dec. 13		
•			Quan	tities.
			Million cubic feet	Second- feet.
Miraflores spillway, waste.  Miraflores spillway, leakage.  Miraflores locks, lockages and tests.  Miraflores locks, leakage.  Miraflores power plant cooling water.  Miraflores locks, lake regulation.  (a) Total outflow.  (b) Total inflow from Gatun Lake 1.  (c) Storage (plus increase, minus decrease).  (d) Net yield (a minus b minus c).  (e) Evaporation on lake (53.461 inches).  (f) Total yield (d plus e).  (g) Rainfall on lake (60.66 inches).  (h) Yield from land area (f minus g).  Includes filtration plant wash water 1.			7,701.6 216.3 788.4 14.0 11,555.4 9,361.4 198.7 2,192.1 198.7 2,390.8 225.5 2,164.3	1. 0 244. 2 6. 2 5. 0 4 366. 4 296. 8 — . 1 69. 5 6. 3 75. 8
	Mean area (square miles).	Rainfall (inches).	Run-off (inches).	Percentage run-off.
Lake surface. Land area Total watershed	1. 6 36. 9 38. 5	60. 66 67. 00 66. 74	60. 66 25. 25 26. 73	100 38 40

<sup>1</sup> Includes filtration plant wash water.

#### SECTION OF SURVEYS.

The section of surveys has continued to attend to all Panama Railroad land and lot surveys and has maintained the established Canal Zone monuments, triangulation stations, and bench marks. The section has also made surveys and prepared maps for the various departments and divisions of the Canal, for the Army and Navy, and for the joint land commission. Attention has been given to the various features of the Canal requiring precise observation.

The report of the acting assistant engineer gives the detail of the

work accomplished:

SECTION OF SURVEYS.

#### F. R. Fitch, Acting Assistant Engineer.

The following report of work done by the section of surveys during the fiscal year 1919-20 is submitted herewith:

#### BUILDING LOTS.

Colon.—Corner and grade stakes were set on 43 lots in the city of Colon. Blocks 20, 26, and 27 of the new layout were monumented. Cristobal.—Corner and grade stakes were set on one lot in Cristobal.

Panama.—Corner and grade stakes were set on one-third of lots 2 and 3, block 23, Santa Cruz district; three 4-foot offset monuments were also set in this block.

#### MAINTENANCE RECORDS.

Gatun Dam.—Y-level readings were taken on the settlement hubs once a month to January, 1920, and since then quarterly readings have been taken. The settlement for the year has been normal. The readings on the lateral thrust line across the bed of the old French Canal were discontinued. This line was established in May, 1919, and read continuously for four months without detecting any movement.

South approach wall.—Precise level readings were taken on the permanent points on both sides of the wall twice a month to January, 1920, and since then once a month. The average settlement for the total length of the wall on the west side was 0.11 of a foot and on the east side 0.12 of a foot. The corresponding average for the two previous

years was 0.14 of a foot.

The maximum settlement has always occurred on the south half of the wall, and the average settlement in this section for the year was 0.135 of a foot on the west side and 0.143 of a foot on the east side. The corresponding average for the previous year was 0.17 of a foot.

Caño Saddle.—Y-level readings taken over the settlement hubs on Caño Saddle showed very slight settlement, being an average of only 0.05 of a foot for the period

January, 1919, to January, 1920.

Cristobal coal dock.—Readings were taken on the walls once a month to determine the spread, if any. A very slight spread was found on the north end between sta $tions^{1} + 33.5$  and 4+33.5.

#### CANAL ZONE BOUNDARY.

Clearing.—The entire 5-mile limit line on the east side of the Canal was cleared and marked with 168 extra monuments. All monuments were stamped with their proper number.

The 5-mile limit line on the west side of the Canal was also cleared and marked with 10 extra monuments between regular monuments 191 and 195 or to Panama Bay. All débris was thrown to one side and the line cleaned to the ground, making an

excellent trail, with the idea of its use by the natives, thereby keeping the line open.

Ties were made between the boundary line and the following triangulation stations: Cabra, Venado, Real, Iron, Lindero, Salud, Chilibre, and Army stations Nos. 206 and S2.

#### TRIANGULATION.

New stations.—A new triangulation station, Cameron, was established to tie in the

monuments on Fort Clayton military reservation.

Four new stations, Guayacan, Teeple, Tumba Vieja, and Pequeni, were established in the vicinity of the Upper Chagres and Pequeni Rivers as a network on which to hang the survey of Alhajuela Basin.

#### ALHAJUELA BASIN.

Authority was granted to make a survey of Alhajuela Basin for the purpose of determining amount of storage possible with a dam just above Alhajuela.

During the last dry season, in preparation for this survey, a triangulation net was established on the Boqueron, Pequeni, and Upper Chagres Rivers.

Y-level elevations were carried up to the junction of the Chagres and Pequeni from a bench mark at Limon. The elevation of the Limon bench was determined by simultaneous readings on the lake surface at Limon, Rio Hondo, Rio Palenque, and Gamboa. A precise level line was run connecting the benches at Limon, Rio Hondo, and Rio Palenque, and the readings at Gamboa were referred to the P. B. M. datum plane. It is proposed to complete the survey proper during the next dry season.

#### SUPPLY DEPARTMENT.

Pastures.—All present and proposed fence lines of Farfan pasture were traversed.  $\Lambda$  line to form the northern boundary of a new pasture at Mandingo was run from the northwest corner of present pasture to the Canal Zone boundary line.

A line was run to form the eastern boundary of a new pasture at Bohio. A reconnoissance of about 8 miles was made between Caimito and Bohio Peninsula to determine new areas for clearing.

Maps and areas of Bohio Peninsula and eight plantations were furnished the superintendent of cattle industry.

#### HEALTH DEPARTMENT.

Gatun swamp.—A survey was made of this swamp for the purpose of locating a

ditch for drainage.

A map was prepared on a scale of 1-2000 showing 1 foot contours over the entire area, the locations of streams, hills, the tree line, the 6-inch water-pipe line to Tero Point, the French Canal, dredging basin and the Mindi Levee. Blue prints were furnished the chief health officer.

#### ELECTRICAL DIVISION.

Duct lines.—The work of checking up the duct-line maps in the Cristobal district was completed.

The same work in the Balboa district has been started and is being done as requested

by the electrical engineer.

Cable line.—A survey was made for a cable line from the duct line at Balboa round-

house to the new cable office at East Balboa.

Hydroelectric station, Gatun.—Two points adjacent to unit No. 3 and two points in the south tailrace were set by precise levels.

#### LAND OFFICE.

Las Esplanadas.—A new projective was made for a map of this section.

The map was plotted up in accordance with the notes of the new survey which was

tied in to the Panama-Ancon-Balboa survey.

Miller's Claim.—A survey was made of Miller's Claim on the Rio Agua Salud, a map drawn up, and blue prints furnished the special attorney.

La Iseca Estate.—A map of this estate was prepared in accordance with the claim-

ant's description of the calls to show the absurd lines of his claim.

Testimony was given in the case before the Joint Land Commission bearing on a map of the adjacent estate of Santa Cruz.

Cansaloma and Waterloo.—A map was prepared showing the boundary lines and

area of this estate.

Playa de Flor Land Development Company and Villalobos Claims.—A survey was made of these claims which are situated in the vicinity of Toro Point. In connection with the survey, the Quebrada Pescaderitos and the trail from Playa de Flor to the mouth of the Rio Arenal was traversed. The entire coast line was located from Toro Point to Nispero and a survey was made of the tract of land claimed by the Panama Railroad at Punta Limon. The location of the Quebrada Petitpie was also definitely fixed.

#### FORTIFICATION DIVISION.

Military reservations.—The boundary lines were established and monumented and descriptions by metes and bounds furnished the district engineer of the followingnamed military reservations: Fort Clayton at Miraflores and Corozal, Fort William D. Davis at Gatun, Fort Randolph at Margarita Point, and 200-Foot Hill at Las Minas Bay

Taboga Island.—A survey was made on Taboga Island under the instructions of

the assistant engineer, fortification division.

#### NAVY DEPARTMENT.

Coco Solo naval reservation.—In connection with the survey and monumenting of the Fort Randolph military reservation, monuments A, B, and C of the naval reservation were reset on the actual boundary in accordance with the views of the special attorney, and a new description by metes and bounds was written up for this

Coco Solo radio station.—The coordinates of this station were computed and azi-

muths determined to Guantanamo, Cuba, and Key West, Fla.

La Palma radio station.—A survey was made establishing the boundary lines of the La Palma radio station on Stanley Island in San Miguel Bay.

True azimuth was determined by solar observation.

Puerto Obaldia radio station.—The boundary of this reservation was run out and monumented, the towers, buildings, etc., located, from which data a map will be made and furnished the Navy Department. Observations for azimuth and position were to be made, but owing to the cloudy weather nothing could be accomplished.

Balboa radio station.—An azimuth line was laid off on the ground at Balboa radio

station on the computed azimuth Balboa-New Orleans.

#### MISCELLANEOUS.

Panama-Ancon-Balboa map.—All corrections and additions were made on this map.

Panama-Ancon-Balboa extension.—The extension of this survey, covering the section

between Balboa Railroad station and Diablo was completed.

Colon-Cristobal survey.—The maps for this survey were completed.

Bench marks.—It is proposed to compile a new bench-mark book, since many of the present reported bench marks are destroyed and covered by the waters of Gatun Lake. To this end all bench marks from Colon to Gatun, inclusive, have been gone over and new descriptions written up.

Precise level bench mark No. 39 at Pedro Miguel was transferred to allow grading

of a hill on which it was located.

Work was begun repairing the precise level bench marks which extend from Colon

Balboa shops.—Precise levels were run over the crane rails in building No. 4 at Balboa shops and profile of same made and furnished the superintendent of the mechanical division.

Gatun dam.—The approximate areas of grass cut over on Gatun dam were deter-

mined and data furnished the foreman of dams and back fills.

Transmission tower 45-1.—Relocating and grade stakes were set for this tower.

Reconnaissance.—A reconnaissance trip was made and reported from Nombre de Dios to Gamboa, via Rios Nombre de Dios, Boqueron, Pequeni, and Chagres.

The East Ridge trail was covered 30 miles from Camp Young on Gatun Lake to Army station No. 8, which is about 6 miles from Cerro Bruja. From this point a cross country reconnaissance was made to Porto Bello via the mouth of the Rio Guanche.

New Chagres.—An investigation of the water supply shortage at the new village

of Chagres was made and separate report made to the engineer of maintenance.

Trails.—Main trails were traversed as follows: Porto Bello, from where it crosses the Canal Zone boundary at monument No. 87 to the north line of the Fort Clayton military reservation; Macambo, from where it leaves the Canal Zone at boundary monument No. 80 on the Rio Cardenas to its junction with the Porto Bello trail to the south.

Miraflores trail cleared from the main highway across the Rio Caimitillo to the

Macambo trail opposite boundary monument No. 81.

The clearing of Miraflores trail was finished from opposite triangulation station

Caimitillo to triangulation station Iron.

The traverse of the Macambo-Agua Buena trail was continued from Canal Zone monument No. 80 on the Rio Cardenas to the second crossing of the Rio Manteca somewhere in the vicinity of monument No. 74.

The Rio Agua Salud-Rio Pilones Ridge trail was cleared from Gatun Lake toward

the Canal Zone boundary for a distance of  $1\frac{1}{2}$  miles. Several trails between New Chagres and Gatun vere investigated to find one suitable for the use of the natives. A separate report of this was made to the engineer of maintenance.

Miles of lines.—Transit, 46; stadia, 166; stadia side shots, 102; Y level, 129; precise

level. 13; total, 456.

#### SECTION OF OFFICE ENGINEER.

The details of the work accomplished by this section are given in the report of the office engineer, which follows:

#### SECTION OF OFFICE ENGINEER.

#### C. J. Embree, Office Engineer.

This section has continued to handle the engineering, architectural, electrical, and miscellaneous design work required for all divisions of the Canal except the mechanical division.

The principal work handled has continued to be that of the electrical and building divisions. The various building and construction projects are described in full in the annual reports of the divisions concerned and will not be repeated here, except by general mention of the most important projects.

Administration building, Coco Solo air station.
Fitty-five thousand barrel concrete oil tank.
Complete set of buildings for Fort Clayton and Fort Davis, including officers' quarters, barracks, stables, incinerator, headquarters building, etc.

A total of 685 working drawings was issued during the year, the work accomplished for the different divisions being as follows:

	1 rac
	ings.
Building division	35
Electrical division	27
Police and fire department	
funicinal division	
oeks division	
Panama Railroad	
General.	1
Total	68
	0.4

During the year the average number of men working was 13\frac{1}{3}, with an average of 3 on vacation, making a total of 16\frac{1}{3} men on the rolls.

During the year we installed a new 60-inch blue-print machine, with a print washer, also a 25 k. w. motor generator set and control equipment.

During the year the following prints were issued:

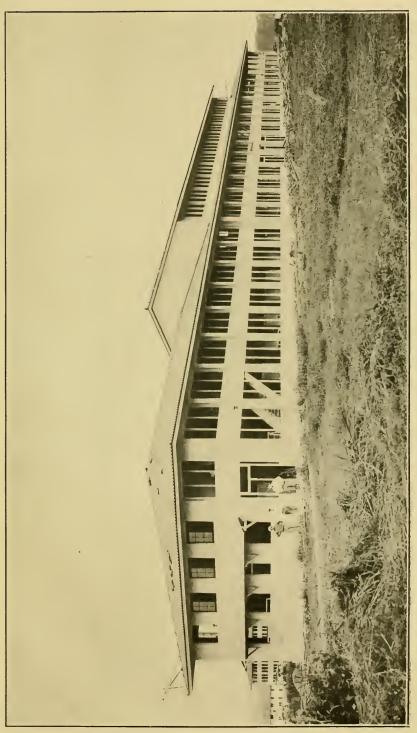
	feet.
Blue prints	224,670
White prints	19,653
Brown prints	8,715

The average cost of blue and brown prints, including labor and material, has been \$0.0118 per square foot.

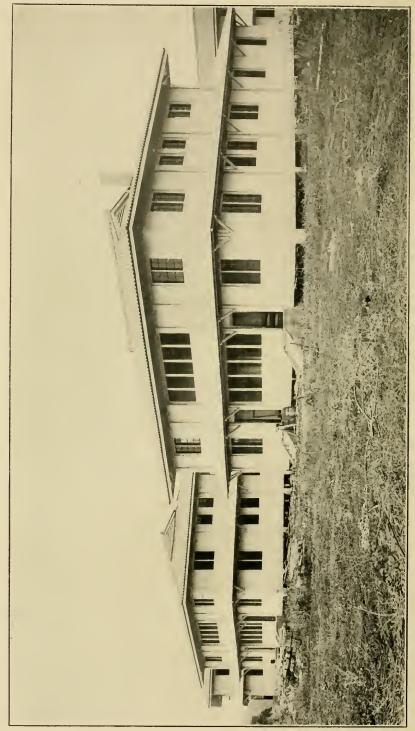
Respectfully submitted.

JAY J. MORROW, Engineer of Maintenance.

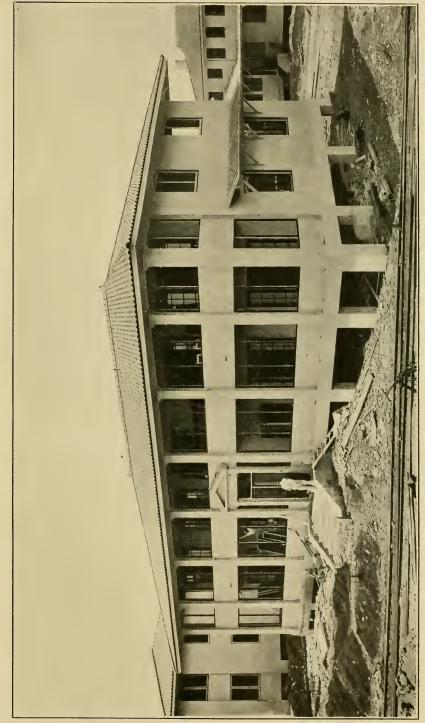
BRIG. GEN. CHESTER HARDING, UNITED STATES ARMY, Governor, The Panama Canal, Balboa Heights, Canal Zone.



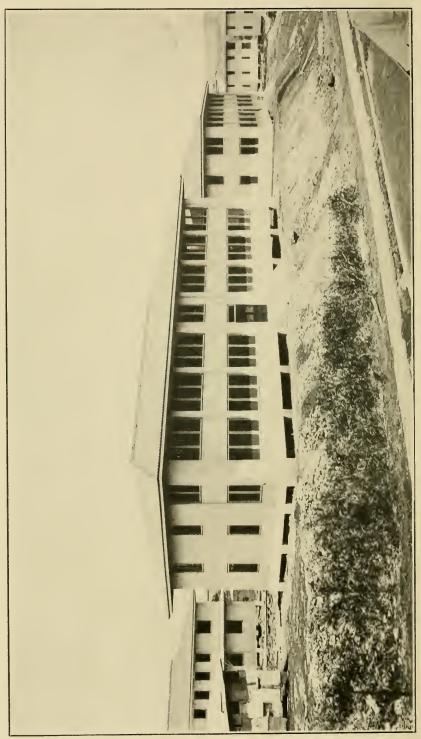
REGIMENTAL HEADQUARTERS.



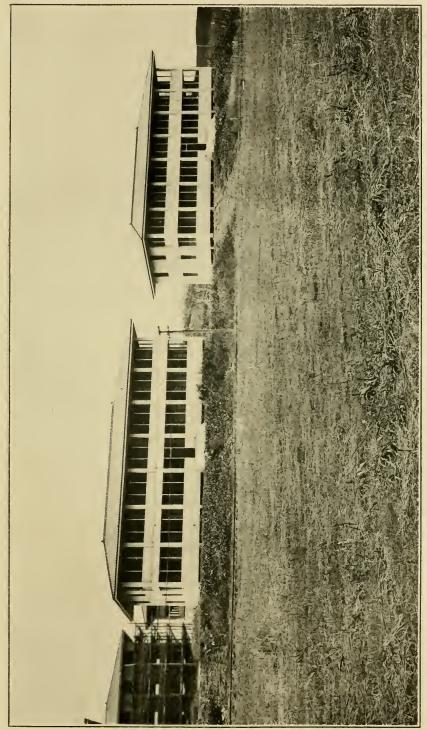
TWO-FAMILY FIELD OFFICERS' AND CAPTAINS' QUARTERS.



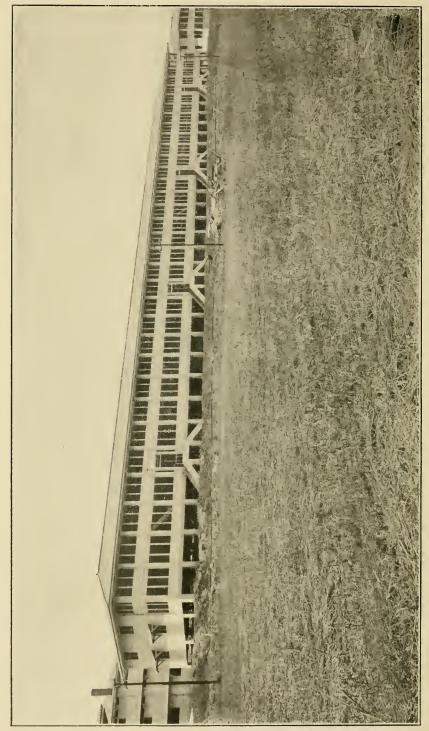
SIX SET LIEUTENANTS' QUARTERS.



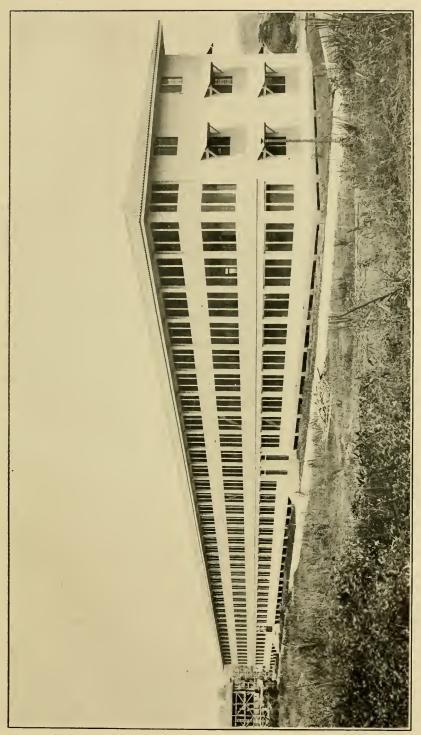
FOUR-FAMILY LIEUTENANTS' QUARTERS.



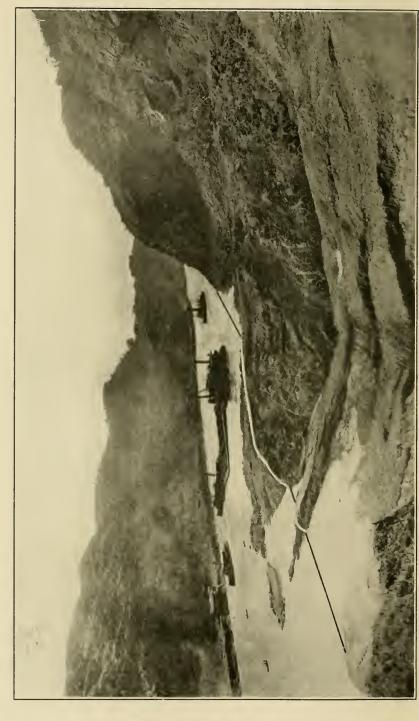
FOUR-FAMILY NONCOMMISSIONED OFFICERS' QUARTERS.



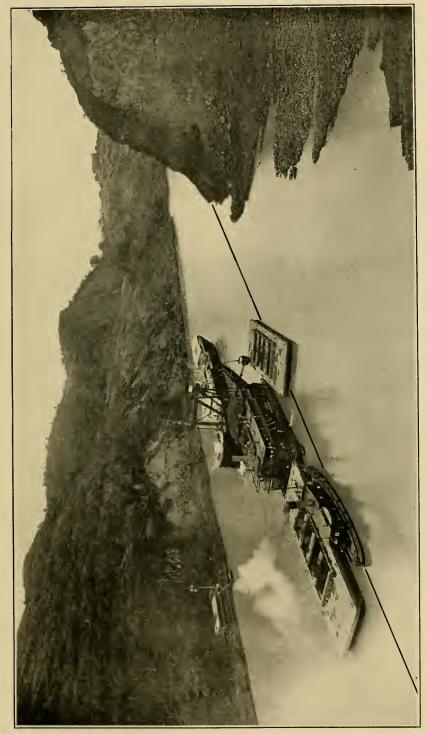
SPECIAL BARRACKS.



BATTALION BARRACKS.

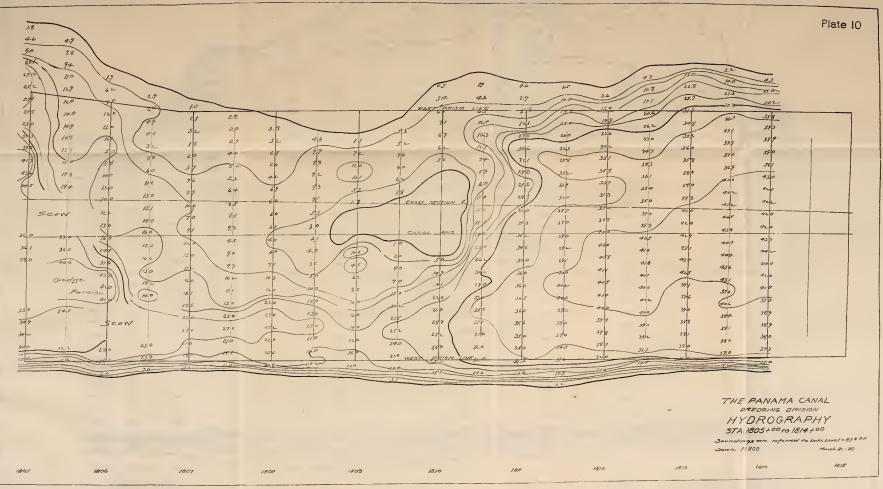


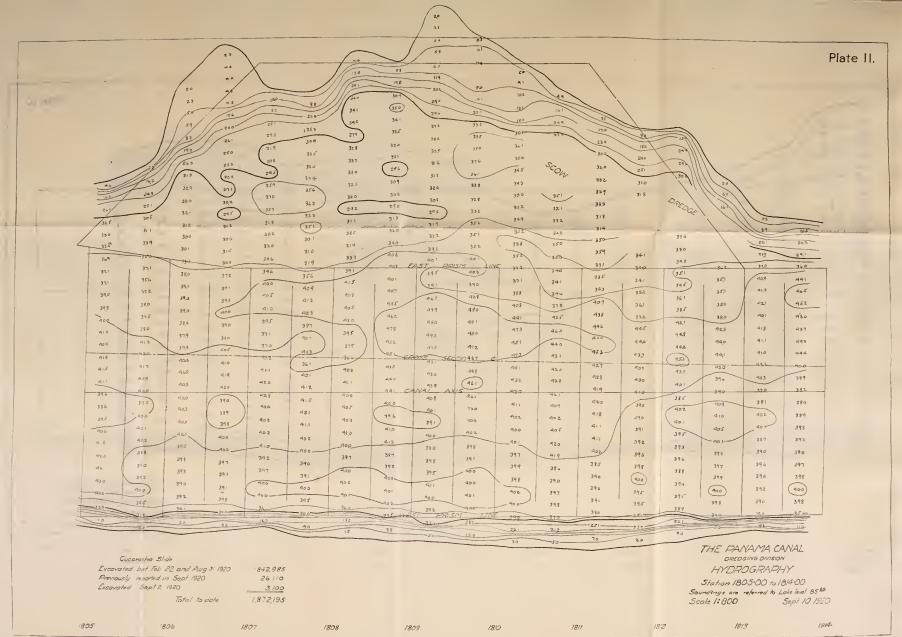
GAILLARD CUT, CUCARACHA SLIDE. MAY, 1920. LINE INDICATES LIMITS OF CANAL PRISM



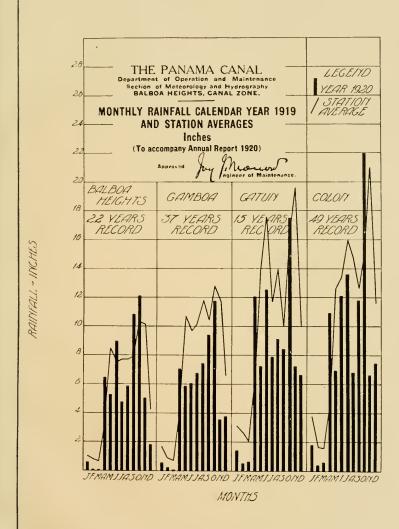
GAILLARD CUT. CUCARACHA SLIDE. AUGUST, 1920. LINE INDICATES LIMITS OF CANAL PRISM.

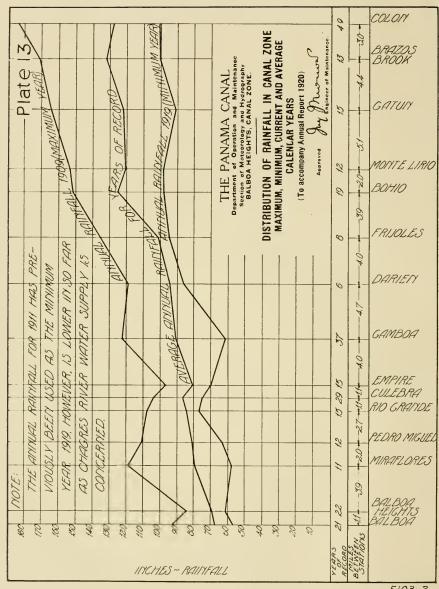




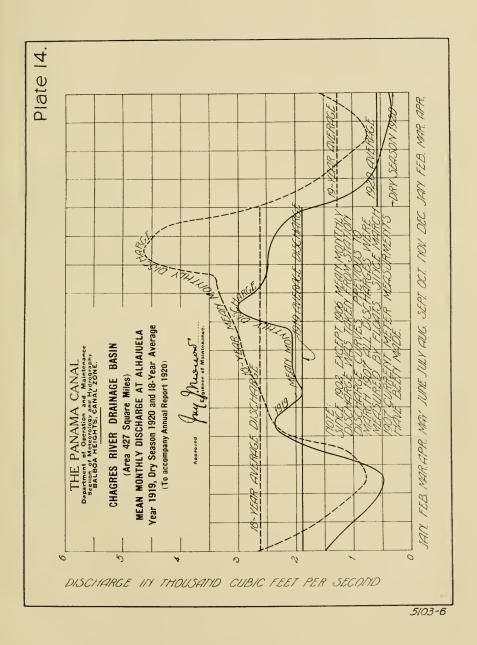


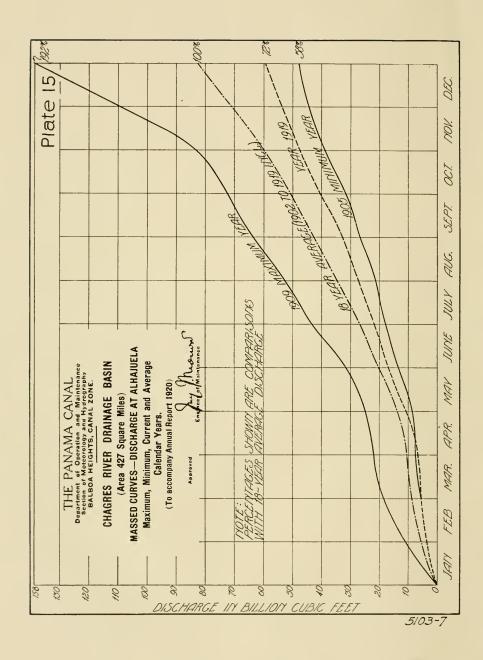
## Plate 12

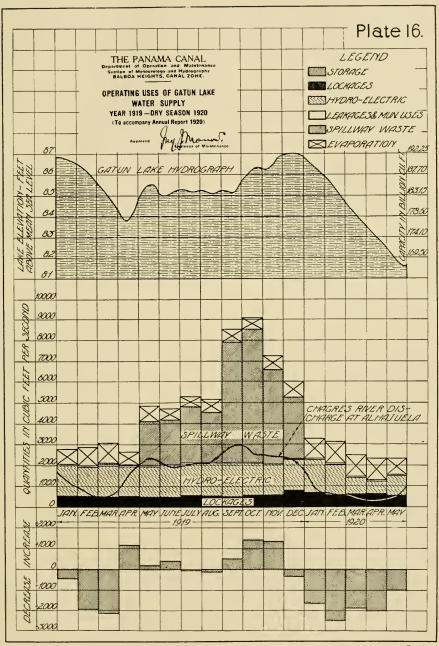


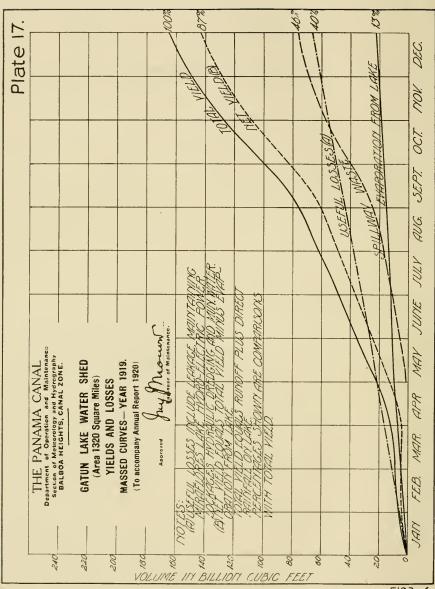


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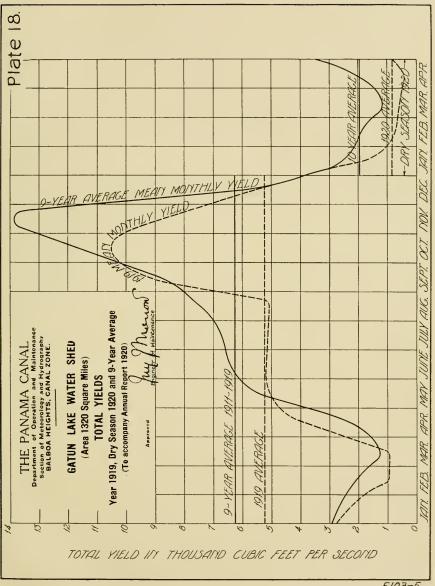








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36				EVAPORATION 1917 EVAPORATION MARCH
57 05.0 5114.0 14.20 20.20			202565	1918 FEBRUARY
DRY SEASON WATER USES 4MOS. HYDROSTA LOCKROLA JATT-AR. C.F.S. C.F.S. 1917 1245 510 1918 1417 555 1920 1417 555		USEFUL LOSSES	18 USLFUL FUL LOSS	IN TANUARY
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#### APPENDIX B.

# REPORT OF THE MARINE SUPERINTENDENT, MARINE DIVISION, DEPARTMENT OF OPERATION AND MAINTENANCE.

Balboa Heights, Canal Zone, July 20, 1920.

Sir: The following report is submitted, covering the operation of the marine division for the fiscal year ended June 30, 1920:

On April 15, 1920, the undersigned relieved Capt. L. R. Sargent,

United States Navy, as marine superintendent.

The terminal ports and the lighthouse subdivision remained throughout the year in charge of the officials named in the last report.

Due to activity of the Cucaracha slide, the Canal was closed to navigation for five days, March 21–24, 1920. Restriction of the channel by the slide since February 21 increased the number of casualties to shipping, through no fault of the personnel; but, fortunately, no serious damage was caused through this condition, although some of the largest ships in the world, notably the *Renown* and the *Mount Vernon*, were passed through during these slide conditions, reflecting credit on the efficiency of the pilot personnel.

The Panama Canal tugs La Boca and Miraftores, loaned to the War

Department for distant service, were returned.

The U. S. S. Favorite, a vessel of 500 tons dead-weight, equipped with marine repair shop, wrecking apparatus, and powerful towing engine, and prepared to lift 25 tons, was received from the Navy Department for use and custody and commissioned as salvage vessel and lighthouse tender. She fills a long-felt need.

All rear range lights were changed from fixed to flashing. Two spar buoys, which marked the anchorage for vessels carrying explo-

sives in Cristobal Harbor, were removed.

The two-story concrete building at Gatun, designed to meet the combined storehouse, repair, and office requirements of the light-house subdivision, was completed, replacing an old and poorly appointed wooden structure and enabling that subdivision to operate with increased efficiency under improved working conditions.

In order to permit the assignment of pilots in rotation to duty at Gatun and Pedro Miguel locks, up to the present attended by annoyance resulting from shortage of quarters at those points, the marine division is erecting in each of these towns two 2-story frame houses,

for occupancy by lock pilots only.

The following is a condensed statement of the operation of the

board of local inspectors:

On June 28, 1920, Lieut. Harry Champeno, United States Navy, was appointed engineer member, vice Lieut. Malcolm C. Davis, United States Navy, detached. Lieut. Commanders John G. Fels and Charles Svennson, United States Naval Reserve Force, continued as chairman and member, respectively.

Semiannual inspections of all floating plant of The Panama Canal and Panama Railroad Company were made and reports submitted. Forty-two hulls of commercial

ships and Canal and railroad plant were inspected in dry dock. Annual inspections were made of 3 American and 17 foreign steamers and 132 motor boats, 59 of the latter being owned by The Panama Canal, 5 by the Panama Railroad Company, and 68 by individuals and companies. Certificates of seaworthiness were issued to all these craft, except to the American steamer Culebra, which was reconverted into a dredge and had no need of certificate. The Paraiso bridge, both pontoon and superstructure, was inspected and recommendations concerning it were made to the Panama Railroad Company. Reports and recommendations were made in connection with surveys and appraisals of various Canal craft. Inspection and hydrostatic test were made of 67 boilers, 60 of which were on Canal and railroad floating plant and 7 of which were on United States Army craft.

Licenses were issued to 10 pilots, 13 masters, 21 mates, 30 engineers, and 126 navigators of motor boats. By indorsement one pilot's license was extended and the grade of one license as navigator of motor boats was raised. Licenses were denied 5 engineers and 28 navigators of motor boats. Two certificates of loss of motor boat navigators'

licenses were issued.

#### SHIPPING STATISTICS,

The total number of ships making the transit of the Canal in seagoing commercial traffic was 2,478, of which 1,180 were in transit from the Atlantic to the Pacific and 1,298 from the Pacific to the Atlantic; this does not include 32 launches, each of less than 10 tons register, and 7 yachts aggregating 764 tons, Panama Canal measurement. The aggregate gross registered tonnage of the 2,478 commercial vessels was 11,057,819, and their aggregate registered net tonnage 7,034,875. Their total net tonnage, Panama Canal measurement, was 8,545,653 tons.

The commercial cargo carried through the Canal amounted to 9,374,499 tons of 2,240 pounds. Of this, 4,092,516 tons were from the Atlantic to the Pacific and 5,281,983 tons were from the Pacific

to the Atlantic.

The total number of ships passing through the Canal in ballast was 329, with an aggregate Panama Canal net tonnage of 1,129,616; 105 with a tonnage of 458,383 were northound and 224, with a tonnage of

761,233, were southbound.

The total number of United States Government vessels making the transit of the Canal free of tolls was 266, of which 51 were bound from the Pacific to the Atlantic and 215 from the Atlantic to the Pacific. These consisted of 218 Navy vessels, 18 Army vessels, and 30 merchant ships with eargo for the Navy. A total of 365,898 tons of cargo was carried by these vessels; 150,814 tons by Navy vessels, 27,275 by Army vessels, and 187,809 by merchant vessels under control of the Navy. Four British tugs, with a tonnage of 413, Panama Canal measurement, but with minus United States equivalent tonnage, passed through the Canal free of tolls.

Eight vessels, carrying passengers only, with an aggregate Panama Canal net tonnage of 56,940, and 24 vessels, with no cargo, but carrying excess bunker coal, with an aggregate Panama Canal net tonnage

of 67,675, were included in the year's commercial traffic.

The total number of commercial vessels without cargo, including those in ballast, ships with no cargo, but carrying excess bunker coal, and vessels with passengers only, but not including launches and yachts, was 361, with an aggregate Panama Canal net tonnage of 1,254,231. Five naval vessels of other nations, totaling 69,536 tons displacement, were also included in this traffic.

Laden vessels totaled 2,117. Of these 927 were in transit from the Atlantic to the Pacific and 1,190 from the Pacific to the Atlantic, with aggregate net tonnages of 3,379,430 and 3,911,992, Panama

Canal measurement, respectively.

The average net tonnage of the commercial vessels was 3,449, Panama Canal measurement, that of the laden vessels was 3,444, and that of the vessels without cargo 3,474. The average cargo of the 2,117 laden vessels was 4,428 tons. Over the total of 2,478 vessels passing through the Canal the average of cargo was 3,783 tons per vessel. The ratio of cargo to net tons of ships carrying cargo was 1.286 tons of cargo to each net ton. Distributed over the entire commercial traffic the ratio was 1.10 tons of cargo per net ton.

During the preceding fiscal year 2,025 ships of 6,131,575 net tons, Panama Canal measurement, carried 6,877,649 tons of cargo through the Canal. The traffic for this fiscal year shows an increase in vessels, tonnage, and cargo amounting, respectively, to 22.37 per cent, 39.38 per cent, and 36.31 per cent, with respect to the traffic of the preceding year. Comparison with traffic in other years is given in the appended Table No. 1. All previous traffic records, based on the number of commercial vessels through the Canal, are exceeded

this year by 16.34 per cent.

Vessels classified by nationalities in the respective numbers of each made the transit through the Canal during the fiscal year as follows: United States, 1,129; British, 753; Japanese, 118; Norwegian, 106; Chilean, 79; Peruvian, 75; French, 60; Spanish, 41; Dutch, 29; Italian, 26; Swedish, 19; German, 17; Danish, 9; Panamanian, 4; Brazilian, 3; Chinese, Portuguese, and Russian, 2 each; and Belgian, Colombian, Costa Rican, and Uruguayan, 1 each. Comparison with the number of vessels of various nations making the transit during preceding years is given in appended Table No. 2.

Respectfully,

E. P. Jessop, Marine Superintendent.

Brig. Gen. Chester Harding, United States Army, Governor, The Panama Canal, Balboa Heights, Canal Zone.

TABLE NO. 1.—Summary of commercial truffic through The Panama Canal during fiscal year 1920 and since its opening to commercial traffic.

										1.00
		of	0	568, 172 715, 724 638, 270 705, 881 575, 480 924, 479	4,128,006	4, 628 0, 488 4, 516 7, 521 4, 919 4, 421	5,246,493	9,374,496	6,144 3,042 4,499	6,27
		Tons of	cargo.	21.867.8	4,12	894, 894, 894, 974, 844,	5,24	9,37	4,926,145 3,063,371 7,083,045 7,535,795 6,923,423 9,374,499	38, 906, 278
	-			n - 0 0 ∞ 0	4	80950	   0;	2	525000	
		· ·	Net.	510, 823 586, 111 586, 186 670, 100 597, 148	3,878,094	765,533 703,462 819,362 822,471 852,019 704,712	4,667,559	8, 545, 653	3,772,167 2,385,284 5,817,607 6,582,942 6,121,923 8,545,653	25, 57
cal.		nnag	Z	ಹೆಬ್ಬಬಬ್ಬ	3,8	788887	4,6	8,5	6,000,000,000,000,000,000,000,000,000,0	33, 225, 576
Total		Canal tonnage.		088 843 050 006 521 316	824	024 404 619 481 462 005	995	819	787 529 821 339 603 819	868
		Can	Gross	672, 757, 765, 873, 772,	5,043,	992, 913, 1,055, 1,050, 1,081, 921,	6,013,995	11,057,819	5, 416, 787 3, 596, 529 8, 530, 821 9, 371, 339 7, 876, 603 11, 057, 819	45,849,898
	_				5,				1	
		Voccolo	eros.	158 188 170 170 196 180 260	1,152	238 220 220 224 224 201	1,326	2,478	1,072 760 1,806 2,068 2,028 2,478	10,212
		Mag	3							=
		of		332, 298 353, 411 320, 912 437, 750 359, 926 518, 782	079	580, 118 477, 878 466, 043 468, 953 556, 241 409, 671	904	983	757 314 456 308 308 553 983	371
		Tons of	cargo.	832, 353, 359, 518,	2,323,	580, 466, 468, 409,	2,958,904	5,281,983	2,838, 1,689, 4,122, 4,182, 5,281,	23,012,371
	-					00770010				
atic.		<i>*</i>	Net.	287, 333 271, 599 320, 461 388, 197 322, 897 440, 612	2,031,099	414,560 342,960 364,304 414,503 463,029 346,325	2,345,681	4,376,780	1,920,346 1,113,632 2,992,147 3,838,981 3,446,914 4,376,780	88,80
Atla		nage	Ž	4 3 3 3 5 7 8 8 8 4 8 8 8 4 8 8 8 8 8 8 8 8 8 8 8	2,03	4 8 8 4 4 8 8 4 4 8 4 8 4 8 4 8 8 4 8	2,34	4,37	21.988.48	17, 588, 800
Pacific to Atlantic.		Canal tonnage.		380 673 637 637 399 399	789	93 34 164 164 28	63	252	252 252 252 252	_
Pacif		Can	Gross	380,3 355,6 418,7 509,6 570,3	2,643,7	532, 393 443, 647 472, 134 529, 464 590, 697 456, 128	3,024,463	5,668,252	2, 758, 922 1, 653, 683 4, 360, 088 5, 433, 297 4, 418, 186 5, 668, 252	24,322,428
			9		2,		<sub>د</sub> ,	5,	ಚ್ಚುಕ್ಕಬ್ಕಾಣ್ಯ	24,
		5	ello.	$^{91}_{92}$	624	110 110 110 99	674	1,298	550 364 927 1,154 1,167 1,298	5,460
		Monola	A G2					-		r.c
	j	jo	,	874 313 358 131 554 697	927	510 610 610 678 678	589	516	388 057 589 487 870 516	907
		Tons of	cargo.	235, 874 362, 313 317, 358 268, 131 215, 554 405, 697	1,804,927	314,510 302,610 428,473 398,568 418,678 424,750	2,287,589	4,092,516	2, 087, 388 1, 374, 057 2, 960, 589 2, 638, 487 2, 740, 870 4, 092, 516	15,893,907
	-								<u> </u>	_
ific.			<u>.</u> ;	223, 490 314, 512 265, 725 281, 903 274, 251 487, 114	1,846,995	350, 973 360, 502 455, 058 407, 968 388, 990 358, 387	2,321,878	4,168,873	1,851,821 1,271,652 2,825,460 2,743,961 2,675,009 4,168,873	15,536,776
Pac		nage	Net.	228 258 258 258 258	1,84	88.54 88.88 88.88	2,32	4,16	2,1,2,2,4,	15,53
Atlantic to Pacific.		Canal tonnage.		708 170 348 369 523 917	35	857 77 77	32	29	6772336	
tlan		Cans	Gross.	291, 74 402, 1, 3 346, 3 363, 5 632, 9	2,400,035	459, 631 469, 757 583, 485 521, 017 490, 765 464, 877	2,989,532	5,389,567	2, 657, 865 1, 912, 846 4, 170, 733 3, 938, 042 3, 458, 417 5, 389, 567	21, 527, 470
¥			Ď.	01 (10) (10)	2,		ci	5,	ല് പ് കുയുധുന്	21,
		-	ets.	88 73 73 140	528	113 99 123 110 105	652	1,180	522 396 879 914 861 1, 180	4,752
		17	v esseus					1		
-					ır	"	ear	:		
					al ye		seal y	30	1915 1916 1917 1918 1919 1920	
					f fise		alf fi	ar-19.	0,000 0,000 0,000 0,000	:
				.61	st hal	90	nd h	al ye	a Jun	
				1919.	r firs	1920	rseed	r fisc	nding nding nding nding	
				er er	Potal for first half fiscal yea		Total for second half fiscal year	Total for fiscal year 1920	sar er ear er sar er sar er	rotal
				July 1919. July Migust September October November Novembe	To	January. 1920. January. Methoriaty March. April. May. June.	Tot	Tot	Fixeal year ending June 30, 1915 Fixeal year ending June 30, 1916 Fixeal year ending June 30, 1917 Fixeal year ending June 30, 1918 Fixeal year ending June 30, 1919 Fixeal year ending June 30, 1920	TC
				July Ang Sepi Oct Nov Dec		Jan Feb Man Apr Man Jun			NAME OF STREET	

Table No. 2.—Number of commercial vessels of various nationalities passing through The Panama Canal, including 172 vessels carrying cargo for United States Government, free from tolls.

8847---20-

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Total.	67 88 72 73 73 88 88 88	113 99 123 110 105	1,180 860 921 905 4111 530	4,807	100 100 123 123 120
Uruguayan.			-	-	
United States.	23 27 28 28 29 29	55 55 55 55 55 55	493 224 198 114 231	1,528	51 53 53 50 50
Swedish.	1 2 2 1		85-1220	54	1 2 2
Spanish.	10%	4	10222	37	11 410
Russian.		- ; ; ; ; ;	26 11-2	12	
Portuguese.		<u>:- ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ;</u>	- : : : : :	1	
Peruvian.	800000	0.440,000	22 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	173	0044000
.nsinsmansa	2	<u> </u>	8 22	14	
Norwegian.	6247074	×4040H	46 145 74 19 16	356	-12mm400
Nicaraguan.				2	
Mexican.			9	9	
Japanese.	46 6 6 7 1 1 2 1	F8F545	44 44 45 45 45 45 45 45 45 45 45 45 45 4	241	4-1-0 0
Italian.	200	H 10 10	2 2 2 2 2 2	18	
Honduran.			- 62	က	
Greek.			: : :	2	
German.		7 5	5 14	6	
French.		88== 8	0 0 0 0 0 0 0 0 0 0 0 0 0	63	64±10∞10∞
Ecuadorian.		<u> </u>			
Dutch.	2000-	e e = -	11 38 11 5	106	0-0
Danish.		!!!	424300	131	- : : : : : : : : : : : : : : : : : : :
Cuban.		<u> </u>	က	8	
Costa Rican.			6 11 11	27	
Colombian.				-	
Chinese.			88	4	
Chilean,	0100401004	400000	38 488 50 50 16	218	040000
Canadian.			1	8	
British.	33 33 34 33 33 34	45833328 41883338	393 306 303 371 193 226	1, 792	255 255 325 325 325 325 325 325 325 325
Brazilian.			7	2	
Belgian.					111-112
Argentinian.					
	ATLANTIC TO PACEFIC. July August September October. November	Fobruary Fobruary March April May June	Total, fiscal year 1920 Total, fiscal year 1919 Total, fiscal year 1918 Total, fiscal year 1917. Total, fiscal year 1916 Total, fiscal year 1916	Total	PAGEIC TO ATLANTIC. July July August September October November December

1 German ships seized in Canal Zone waters, and issued United States registers after transit of Canal.

Table No. 2.—Number of commercial vessels of various nationalities passing through The Panama Canal, etc.—Continued.

Total.	125 109 112 110 119 99	1,298 1,165 1,209 971 376 558	5,577	2,478 2,025 2,025 1,876 1,876 1,088	10,384
Uruguayan.				- : : : : :	-
United States.	64 51 51 44	636 518 404 266 124 239	2,187	1,129 786 628 464 238 470	3,715
Swedish.	innen	971180 100 100	69	138 239 138 138 18 18	123
Spanish.	9 1	213 3 3 10 10 110	41	20 52 52	78
Russian.		1 17	4	0 - 1 1 1 1 1 1	16
Portuguese.		- ! ! ! ! !	-	0	2
Peruvian.	60 60 60 60 60	2 1 4 2 2 3 3 3 3 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5	170	4 88 83 54 4 88 88 84	343
.nainamanaT	-	7 5 7 7 7 7	6	4 41-98	23
Norwegian.	0,000004	86 26 26 26 26 26 26	411	106 128 128 45 45	292
Vicaraguan.			-	1 1	က
Mexiean.		112	6	13 13	15
Japanese.	1-80400	\$488°0	119	118 87 53 72 24 6	360
Italian.	418181	13	17	20 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	35
Honduran.		2	8		9
Greek.		1 2 1	8	12.33	ಸು
Сеттап.	H 23 44 70	12	14	17	23
French.	1 2667	25 33 5 1	166	60 104 52 9 9	229
Ecuadorian.		-	-	- : : : : :	-
Dutch.	121	21 18 18 88 4 2	87	29 19 49 74 7	193
Danish.		56 56 17 13 13	141	9 100 18 23	272
Сиран,		6	ಣ	9	9
Costa Rican.	1 1 1 1 1	1001 112	53	1 12 20 23 23	56
Colombian.	1	-	-	77	2
Chinese.		00	4	0.40	8
Chilean.	20,2424	144944 101	217	33.99.37	435
Canadian.				1	8
British.	27 27 33 27 27 27	360 396 165 239 239	1,865	753 602 699 780 358 465	3,657
Brazilian.	- : : : : :	- : : : : :	1	60	က
Belgian.			2		2
Argentinian.		-   -	2		2
	PACIFIC TO ATLANTIC—Con. 1920: January February March April May June.	Total, fiscal year 1920. Total, fiscal year 1915. Total, fiscal year 1915. Total, fiscal year 1917. Total, fiscal year 1917. Total, fiscal year 1917. Total, fiscal year 1915.	Total	Total in both directions by fiscal 1920 1920 1919 1918 1917 1916	Grand total

# APPENDIX C.

# REPORT OF THE SUPERINTENDENT, MECHANICAL DIVISION.

Balboa, Canal Zone, July 19, 1920.

Sir: I have the honor to submit herewith the annual report relative to the operations of the mechanical division for the fiscal year ended June 30, 1920.

# ORGANIZATION.

The general organization of the division has remained essentially the same as at the beginning of the year.

Superintendent, mechanical division, Commander E. G. Kintner,

C. C., United States Navy.

Assistant superintendent, Mr. H. H. Evans.

Mr. G. S. Tower was appointed to the position of mechanical engineer, reporting for duty December 10, 1919. This position was previously held by Mr. W. J. Auten, who resigned on August 25,

1919, while on leave in the United States.

Mr. W. H. Stone returned from duty with the American forces in France, where he held the rank of captain, Engineer Corps (Railway Transportation), U. S. A. He reported for duty on July 10, 1919, and immediately resumed his former position of general foreman, Cristobal shops.

Mr. W. J. Daglish, on account of Mr. Stone's return, was relieved of his duties as general foreman and was appointed assistant general

foreman, Cristobal shops, on July 10, 1919.

# PRINCIPAL WORK PERFORMED.

There is given below an outline of the principal items of work performed during the year, listing only those on which considerable sums of money were expended.

# AT BALBOA SHOPS.

(1) Completion of overhaul and repairs to ex-German merchant steamers *Uarda* (renamed *Salaverry*) and *Anubis* (renamed *Paita*). The former was delivered for operation July 14, the latter October 6, 1919, the *Anubis* having been considerably delayed by nondelivery of parts from the United States, held up by strikes.

(2) Completion of the repairs and alterations to the Cristobal, of the Panama Railroad Steamship Line, the work including not only a thorough overhaul but also very extensive alterations. The vessel was changed from a coal burner to an oil burner. The accommodations for officers and crew were rebuilt. The passenger space was entirely changed and greatly enlarged, as was also the cold-storage system. The overhaul included installation of new boilers, refitting of main engines and practically all auxiliaries in the ship.

(3) The steamship Azov was given a general overhaul of machinery and repairs, in dry dock, to the hull, including renewal of about 25 shell plates, numerous frames,

and the lower half of the stem.

(4) The U. S. S. Melville after arriving at this plant in tow in a disabled condition, with boilers out of commission, had installed modified furnace fronts and certain changes in her oil-burning system.

(5) The U. S. battleship Rhode Island was placed in dry dock on account of broken outside coupling. Repairs were made to the strut fastenings, which had been loosened; new coupling and new propeller shaft were made from rough machined spares carried by the vessel. The Navy Department ordered this vessel to proceed to Mare Island Navy Yard, under one engine, when it was found, after removal of the stern tube shaft to the shop, that it was cracked; there was no material on the Isthmus suitable for the manufacture of this part.

(6) The Peruvian cruiser Lima received extensive repairs, particularly to the boilers and hull structure in the vicinity of the machinery spaces, the rudder, and

steering gear. A new radio house was constructed, also a new pilot house.

(7) The steamship Acajutla, belonging to the Pacific Steamship Navigation Company, was altered from coal burning to oil burning and received extensive repairs to her hull and machinery.

(8) Repairs to United States Shipping Board vessels were made as follows: Okiya, Sewickly, Ossining, Aimwell, Bonham, Lake Fitch, Cawker, Xenia, Western Cross, and

Tanka.

(9) The Italian merchant vessel Ansaldo San Giorgio I received extensive repairs to her Diesel engines.

(10) The United States submarines stationed at Coco Solo were dry-docked and

given miscellaneous repairs.

 (11) The steamship Lady Sybil received general repairs.
 (12) The salvage of the steamship Olockson (owned by the United States Shipping) Board), which had been sunk near the Pacific entrance of the Canal to extinguish a fire in the cargo of gasoline.

(13) Other important ship work performed at Balboa shops was as follows:

Motor schooner Santa Elena: Repairs to main engines and pumps, water lines, engine room condenser, and deck.

Steamship Guatemala: Dock, clean and paint bottom; repairs to rudder and stern

bushing.

Steamship Achilles: Dock, clean and paint bottom; repairs to hull.

Steamship Coalinga: Dock, clean and paint bottom and above load line; repairs to

main engines, auxiliary machinery, boilers, oil lines, and sea valves.

Steamship La Habra: Dock, clean and paint bottom; repairs to engine room, boilers, propeller and stern bushing, steam and oil lines.

Steamship Minnesotan: Repairs to anchor windlass, circulating pump, boilers,

engine room, and painting deck houses.

Steamship Ardmore: Dock, clean and paint bottom; repairs to hull, steering engine, smothering system, tail shaft and propeller, sea valves, boilers, main engines, auxiliary machinery and lines, booms, stack guys, awnings, and hatch, and painting deck and hold.

Steamship Lempoc: Repairs to boilers, main engines, copper pipe lines, and paint-

ing hull above water line.

Steamship C-32: Repairs to boilers, auxiliary machinery, main steam and auxiliary lines.

Steamship Cethana: Repairs to main engines and auxiliaries, oil lines, and deck. Steamship Petunia: Repairs to boilers, main engines, and auxiliary machinery.

Steamship San Joaquin: Dock, clean and paint bottom; repairs to boilers and oilburning system, main engines, auxiliary machinery, evaporator, deck steam lines, and rudder.

Steamship Anita: Repairs to boilers.

Steamship Benjamin Brewster: Dock, clean and paint bottom; repairs to boilers, main engines, auxiliary machinery, and hull.

Steamship Cordelia: Dock, clean and paint bottom; repairs to cargo pumps, cargo

lines, and auxiliary lines.

Steamship Huasco: Dock, clean and paint bottom; repairs to hull, stern bushing, and rudder.

Steamship S. V. Harkness: Dock, clean and paint bottom; repairs to main engines,

auxiliaries, cargo oil lines and valves, hull, spare tail shaft, and rudder.

(14) Overhaul and repairing of dredges, scows, and tugs of the dredging division. On account of the slides which took place this year, the amount of these repairs was considerably increased.

(15) The two sand cranes used in the gravel plant at Gamboa were rebuilt and

recrected after having been wrecked by a windstorm.

(16) The manufacture of lumber from timber cut on the Canal Zone has been continued. The rate of consumption of several species now exceeds the rate of supply.

(17) Four new 61-foot steel-frame passenger coaches were completed in the car shop and put into active service. These cars are notable on account of being trimmed with caoba blanca, a native wood. They were finished in the natural color.

(18) Twenty-five 40-ton flat cars were rebuilt for the Alaskan Engineering Com-

(19) The following railway equipment was built:

4 troop cars and 2 searchlight cars for the United States Army. 1 magnet car for loading scrap.

#### AT CRISTOBAL SHOPS.

(1) Completion of the alterations to fit the steamship Middlebury as a cattle carrier. (2) The steamship Culebra received extensive repairs and alterations in connection with restoring her from her condition as a cattle carrier to her previous condition as a seagoing dredge. This vessel was moved to Balboa shops on April 6, 1920, for the completion of the work on account of the many interruptions at Cristobal.

(3) Extensive repairs in dry dock were made to planking and the frames of the tug

(4) Salvage of the steamship Marne (owned by the United States Shipping Board). This vessel was raised after being sunk in Cristobal Harbor to extinguish a fire in the cargo of benzene. The vessel caught fire a second time and sank in the harbor on account of an explosion. She was again raised and unloaded.

The following Canal equipment and other vessels were in dry dock for repairs during the year:

#### BALBOA DRY DOCK.

(a) Canal equipment: Tugs Bolivar, Cocoli, Empire, Gatun, Gorgona, La Boca, Miraflores, barges Nos. 91, 131, 226; dredges Nos. 84, 86, Cascadas, Corozal, Culebra, Gamboa, Paraiso; scows Nos. 139, 140; caisson No. 1; supply boat No. 2.

(b) Vessels other than Canal equipment: Steamships Transvaal, Trolltind, Fort Russel, Oraton, Joan of Arc, Uarda. Benzonia, Brookland, Middlebury, Azov, Cristobal, Anubis, Aysen, Bushrod, Gualemala, Huasco, Bonham, Coalinga, Achilles, La Habra, Ardmore, Lake Elkwater, Acajutla, Lake Fabyan, Cawker, Lake Fitch, Lake Garza, San Joaquin, Benjamin Brewster, Lady Sybil, Lake Flynus, Relay, Cordelia, S. V. Harkness, Peru, Hwah Jah; United States steamships Chicago, Rhode Island, Melville, Ingraham, Gen. George W. Getty, Thornton, Sciota; submarines R-21, R-22, R-23, R-24, R-25, R-26, R-27, C-32; launches Limon, Vacuum; submarine chasers No. 280, V-12; cable ship Guardian, cruiser Lima, tender Perico, Panama Railroad barge No. 13.

# CRISTOBAL DRY DOCK.

(a) Canal equipment: Tugs Porto Bello, Engineer, Tavernilla, Coco Solo, Sanidad;

barges Nos. 3, 17, 19, 26, 28, 49, 56, 150, 161; coal hoist No. 1, derrick barge No. 157, rock breaker Vulcan, supply boat No. 1.

(b) Vessels other than Canal equipment: Steamships Cartegena, Caribbean, Jamaica, Manavi, Orotina, Nemesis, Paraiso, Poe, A. G. Force, San Blas, Crowley, Salvador, Cauca, Balboa, San Juan, Mecklenburg, Kuwa, Ottawa, Fasset, Boxley, Battonville; submarines C-2, C-3, C-34, C-44; submarine chasers Nos. 284, 285; submarine patrol boats Nos. 1841, 2232, 2235; schooners Aviator, Linda S., Laura C. Hall, Ady, W. H. Marston, Balsa; mine planters Graham, C. W. Field, No. 53; U. S. S. Breakwater, Eagle No. 14, Eagle No. 31; launches Pequeni, Wilhelm; Panama Railroad barges Nos. 1 and 2, Panama Steam Navigation Co. barge "S," tug San Juan, yacht Louise, United States Army boxes. United States Army barge.

The total number of vessels other than tugs, barges, and dredges worked on at Balboa and Cristobal shops during the year was:

Balboa, 422; Cristobal, 642; total, 1,064.

# MISCELLANEOUS MATTERS.

1. The accounting system has been improved so as to give shipping agents itemized costs. This change assists in making estimates for work and in the administration of the plant.

2. The reclaiming mill has rolled 438,654 pounds of scrap steel and iron into rods and bars since the mill was put in service in February.

3. Metal parts to the amount of 1,202,781 pounds have been recovered from scrap and used in repairs to Panama Railroad freight cars.

4. Scrap lumber to the amount of 97,000 feet b. m. has been re-

worked and used in repairs to railroad cars.

5. The boiler inspector who inspects and tests all steam boilers for The Panama Canal and Panama Railroad, except those on floating equipment, conducted 224 hydrostatic tests and 817 inspections of boilers. There are 178 boilers in service that are subject to his inspection.

6. There were 54,122 gallons of paint manufactured during the year

at a total cost of \$120,448.

7. Inspections and repairs were made during the year on miscellaneous equipment as follows: Typewriters, 1,782; adding machines,

329; comptometers, 166; cash registers, 1,023; scales, 3,103.

8. The total output of native lumber of all species during the year was 1,457,805 feet b. m. The quantities of the various species are given, together with the names of the standard woods for which they were substituted.

Native specie.	Quantity produced (feet b. m.).	Cost per thousand.	Substituted in the place of—
Bateo, maria, ponulo, roble, espaveAlcavu		\$50.00	Fir and yellow pine.
First grade	41,173	70.00	
Second grade		55, 00	
Caoba Blanca			Mahogany.
First grade	148,094	70.00	
Second grade	16, 454	55.00	
Almendra, alcareto, amargo	819,683	85.00	Oak.
Cedro Amargo:	20 510	85, 00	
First grade	22,516	75, 00	
Second grade	2,502 12,038	85, 00	
Mangle Colorado		110.00	
GuayaconNispero	1,027	110.00	
Grand total	1,457,805		

The economy of using native lumber can be determined by comparing the cost of native lumber shown above with the market value of standard woods. To the saving, due to the lower sale prices, the ocean freight from the United States on the entire quantity must be added. Also Isthmian freight from the Atlantic to the Pacific side is saved on, perhaps, 75 per cent of the total. The expense of handling is, of course, also lessened.

#### IMPROVEMENTS.

1. A light repair shop is being constructed adjacent to the commercial piers at Cristobal to facilitate repairs to ships at the piers. It is expected to have this shop in operation about October, 1920. The shop has a floor 75 feet by 110 feet and contains principally machine-shop tools. It is located in one end of a new concrete building, the other end being occupied by the supply department and steamship offices.

2. A reclaiming roll was installed in Balboa shops to reroll miscellaneous steel and iron scrap into round and rectangular section

rods and bars.

3. A shed has been constructed near the Balboa roundhouse to house the wrecking crane.

4. An industrial railway has been constructed and is in use for conveying scrap wood from the wood shop to the boiler house, the cars being moved back and forth by hand.

5. Work is under way to roof over between buildings 2 and 3, Balboa, to permit rearrangement of the pipe shop which is badly

congested.

6. A large horizontal boring mill was installed at Balboa.

7. Competitive examinations of applicants for apprenticeship were held.

# NEEDS FOR THE COMING FISCAL YEAR.

1. The construction of new shops and dry-dock facilities at Cristobal. This has been recommended for several years and is a matter of much importance, as the present plant is inadequate and much out of date.

2. Provision of additional quarters at Balboa and Cristobal for

both gold and silver employees.

3. The replacement of worn and obsolete tools, particularly at Cristobal, because of the delay in providing the new shops. Many tools are old French tools or those used during construction.

4. Enlargement of the gas plant for generation of oxygen and

hydrogen to meet the demand.

5. Installation of proper facilities for heat treatment of large forgings.

# STATISTICAL DATA.

The following statistical statements and plates accompany the report:

Table No. 1, abstract of expenditures.

Table No. 2, statement of overtime work performed, showing the per cent of the total pay roll.

Table No. 3, force report.

Table No. 4, statement of foundry outputs.

Table No. 5, expenditures and output of the oxy-acetylene plant.

Table No. 6, operation of Panama Canal dry docks.

Table No. 7. locomotive mileage and operating expenses, road service. Table No. 8. locomotive engine days and operating expenses, yard service.

Table No. 9. car work, repairs by classes.

Table No. 10, railway shops, indirect expenses, direct labor, shop expense percentage, and transportation expenses on locomotives and cars.

Table No. 11, statement showing the power costs at Balboa shops.

Table No. 12, statement showing amount of general Canal overhead added to the cost of mechanical division work for outsiders.

Table No. 13, status as of June 30, 1920.

Plate No. 20, showing the classes of work and source of revenue.

Plate No. 21, showing the gross mechanical division overhead expense compared with the total direct labor charges.

Plate No. 22, showing comparatively the productive labor, overhead expense, supervision, maintenance, and power consumptions of marine shops.

Plate No. 23, showing the growth of work at Panama Canal repair wharves from 1916 to 1920, inclusive.

Respectfully submitted.

E. G. KINTNER, Superintendent, Mechanical Division.

Brig. Gen. Chester Harding, United States Army, Governor, The Panama Canal, Balboa Heights, Canal Zone.

Table No. 1.—Abstract of expenditures.

Month.	Labor.	Division overhead.	Machine.	Material.	Other expense.	Total.
BALBOA SHOPS.						
July August September October November December	\$182, 476. 20 217, 319. 15 204, 253. 52 199, 623. 89 181, 677. 96 206, 005. 27	\$54,628.75 54,101.20 57,056.07 47,443.86 47,326.71 64,101.10	\$12, 913. 55 14, 355. 77 13, 089. 68 13, 189. 69 11, 424. 18 12, 235. 25	\$155, 485, 68 138, 014, 69 142, 769, 51 158, 731, 43 159, 397, 18 151, 162, 73	\$103,832.99 50,587.97 57,549.79 41,190.20 38,296.66 39,783.24	\$509, 337, 17 474, 378, 78 474, 718, 57 460, 179, 07 441, 122, 69 473, 287, 59
January. February. March. April. May. June	214, 380, 70 199, 648, 95 245, 913, 54 248, 998, 99 199, 674, 97 201, 370, 15	52, 410, 24 54, 681, 89 64, 053, 49 70, 497, 05 51, 387, 87 47, 455, 81	12, 884. 71 11, 867. 73 14, 972. 08 15, 364. 29 15, 998. 36 15, 728. 41	172, 218, 58 125, 660, 71 184, 717, 94 152, 953, 28 166, 917, 00 140, 351, 72	42,819.01 49,491.27 46,782.10 53,164.73 154,763.46 51,017.75	494, 713. 24 441, 350. 55 556, 439. 15 540, 978. 34 588, 741. 66 455, 923. 84
Total	2,504,343.29 208,695.28 205,345.37	665, 144. 04 55, 428. 67	164, 023. 70 13, 668. 64	1,848,380.45 154,031.70 144,946.16	729, 279. 17 60, 773. 26 32, 216. 81	5,911,170.65 492,597.55 382,508.34
CRISTOBAL SHOPS.						
July 1919. August September October November December	51,631.35 56,176.74 52,363.32 56,988.14 48,030.43 57,779.55	17,039.59 16,487.31 14,791.20 16,314.27 14,437.76 17,726.57	2,692.44 3,028.72 2,757.22 3,533.74 2,602.98 3,051.78	23, 461.68 24, 747.25 26, 344.69 29, 495.53 21, 849.26 26, 125.07	10,018.90 35,134.22 8,314.06 2,750.80 4,632.90 3,776.52	104, 843. 96 135, 574. 24 104, 570. 49 109, 082. 45 91, 553. 33 108, 459. 49
1920. January. February March April May June	65, 294, 85 63, 962, 11 73, 336, 59 74, 302, 99 66, 631, 05 65, 973, 32	20,746.74 20,417.90 23,086.22 22,868.73 19,370.67 18,094.84	3,457.16 2,937.71 2,723.25 2,874.17 3,017.14 3,240.10	24, 823. 57 28, 679. 10 30, 196. 59 33, 349. 94 26, 999. 62 23, 916. 57	9,638.14 23,558.79 9,637.35 25,516.52 22,380.71 373.11	123, 960, 46 139, 555, 61 138, 980, 00 158, 912, 35 138, 399, 19 111, 597, 94
Total	732,470.44 61,039.20 48,318.05	221, 381. 80 18, 448. 48	35, 916. 41 2, 993. 04	319, 988. 87 26, 665. 74 20, 534. 98	155, 732. 02 12, 977. 67 5, 874. 26	1,465,489.54 122,124.13 74,727.29
TOTAL.						
July August September October November December	234, 107, 55 273, 495, 89 256, 616, 84 256, 612, 03 232, 708, 39 263, 784, 82	71,668.34 70,588.51 71,847.27 63,758.13 61,764.47 81,827.67	15,605.99 17,384.49 15,846.90 16,723.43 14,027.16 15,287.03	178, 947, 36 162, 761, 94 169, 114, 20 188, 226, 96 181, 246, 44 177, 287, 80	113,851.89 85,722.19 65,863.85 43,941.00 42,929.56 43,559.76	614,181.13 609,953.02 579,289.06 569,261.55 532,676.02 581,747.08
1920. January February March April May June	279, 675. 55 263, 611. 06 319, 250. 13 323, 301. 98 266, 306. 02 267, 343. 47	73, 156, 98 75, 099, 79 87, 139, 71 93, 365, 78 70, 758, 54 65, 550, 65	16,341.87 14,805.44 17,695.33 18,238.46 19,015.50 18,968.51	197, 042. 15 154, 339. 81 214, 914. 53 186, 303. 22 193, 916. 62 164, 268. 29	52,457.15 73,050.06 56,419.45 78,681.25 177,144.17 51,390.86	618, 673. 70 580, 906. 16 695, 419. 15 699, 890. 69 727, 140. 85 567, 521. 78
Total	3, 236, 813. 73 269, 734. 48 253, 663. 42	886, 525. 84 73, 877. 15	199, 940. 11 16, 661. 67	2,168,369.32 180,697.45 165,481.14	885,011.19 73,750.93 38,091.06	7,376,660.19 614,721.68 457,235.62

 $<sup>^{\</sup>dagger}$  Includes charges, \$100,813.20, for work on the steamship Culebra , transferred from Cristobal to Balboa shop accounts.

Table No. 2.—Statement of overtime work performed, showing the per cent of the total pay roll.

	Balboa	shops.	Cristoba	l shops.	. Tot:	. Total.	
Month.	Overtime.	Per cent of pay roll.	Overtime.	Per cent of pay roll.	Overtime.	Per cent of pay roll.	
1919.							
July	\$29,165.06	12.81	\$6,385.71	10.31	\$35,550.77	11.20	
August		14.13	5,900.33	9.71	38,707.91	12.03	
September	18,934.50	8.72	7,033.39	12.30	25, 967. 89	8.54	
October	7,999.38	3.74	6,501.61	10.73	14,500.99	4.78	
November	15,678.72	7.99	6, 193. 72	11.94	21,872.44	7.90	
December	14,637.89	6.63	6,380.07	10.26	21,017.96	6.72	
1000							
1920.	14,605.21	6.41	12,555.03	17.95	27,160.24	8. 27	
January		9.31	12, 333.03	18.48	32,083.29	10.38	
February		14.49	15,413.57	19.81	52,800.57	14.36	
April		16.19	12, 973. 16	16.15	55, 205. 93	14.78	
May		5,73	7,780.28	10.53	20,076.11	6.28	
June	8,605.85	4.01	7,070.62	9.19	15,676.47	4.90	
Tetal .	052 000 00		106 622 60		260 600 57		
Total	253,986.69	9.18	106,633.88	13.11	360,620.57	9.18	
Average per month last year		11.49	8,886.16 7,623.72	15.78	30,051.71	12.30	
Average per month last year	20,080.01	11.49	1,025.12	10.78	31, 210. 33	12.30	

Table No. 3.—Force report.
[Average number of men actually working.]

V (1	Ba	lboa sho	ops.	Cris	stobal sh	ops.		Total.	
Month.	Gold.	Silver.	Total.	Gold.	Silver.	Total.	Gold.	Silver.	Total.
July 1919. August September October November December	774 778 796 802 805 798	1,388 1,412 1,517 1,453 1,450 1,442	2, 162 2, 190 2, 313 2, 255 2, 255 2, 240	186 185 186 172 174 174	489 418 375 480 457 462	675 603 561 652 631 636	960 963 982 974 979 972	1,877 1,830 1,892 1,933 1,907 1,904	2,837 2,793 2,874 2,907 2,886 2,876
1920. January. February. March. April. May. June.	845 761 884 905 755 806	1,490 1,415 1,329 1,372 1,337 1,264	2,335 2,176 2,213 2,277 2,092 2,070	189 198 218 211 215 202	458 480 457 580 471 411	647 678 675 791 686 613	1,034 959 1,102 1,116 970 1,008	1,948 1,895 1,786 1,952 1,808 1,675	2,982 2,854 2,888 3,068 2,778 2,683
Total Average per month this year. Average per month last year.	9,709 809 583	16,869 1,406 1,296	26, 578 2, 215 1, 879	2,310 193 113	5,538 461 362	7,848 654 475	12,019 1,002 696	22,407 1,867 1,658	34, 429 2, 86 2, 35

Table No. 4.—Statement of foundry outputs.

		Nonferrous	3.		Iron.	
Month.	Patterns.	Castings.	Weight.	Patterns.	Castings.	Weight.
1919. July	42 50 62 39 40 43	1,060 1,369 1,362 955 1,221 4,443	19,308 28,0863 27,0973 15,9852 27,961 13,3562	71 52 64 59 58 57	3,417 2,335 2,663 2,396 2,961 3,513	143,370½ 130,226½ 117,173 134,066¾ 98,276 129,358
January. February. March. April. May June.	67 48 44 10 18 9	2,837 2,357 1,036 1,903 1,370 846	24,720 21,533¼ 9,460 14,388 11,759¼ 9,364¼	46 55 34 32 46 30	3,055 1,687 3,157 1,137 1,055 1,208	95,914 58,893 94,371 76,801‡ 141,362 64,581
Total	472 39 51	20,759 1,730 2,276	223,020 18,585 15,867	604 50 58	28,584 2,382 3,317	1, 284, 393 107, 033 144, 598
			l .	'		
		Steel.	1		Total.	
Month.	Patterns.		Weight.	Patterns.	Total.	Weight.
Month.  July 1919.  August September October November December	Patterns.  21 18 19 19 4 14		Weight.  45,070 34,860 27,361 24,093 29,691 26,114	Patterns.  134 120 145 117 102 114		Weight.  207,748½ 193,173½ 171,631½ 174,145½ 155,928 168,828½
July 1919. August September October November	21 18 19 19 4	382 334 283 590 585	45,070 34,860 27,361 24,093 29,691	134 120 145 117 102	4,859 4,038 4,308 3,941 4,767	207, 7481 193, 1731 171, 6311 174, 1451 155, 928

Table No. 5.—Expenditures and output of the oxy-acetylene plant, Balboa shops.

Month.	Total expendi- tures.	Oxygen out put (cubic feet).	Acetylene output (cubic feet).	Hydrogen output (cubic feet).
July August September October November December	2, 778. 49 3, 049. 34 3, 256. 23	154,000 123,200 129,500 151,800 122,800 152,700	70,777 69,142 67,851 81,750 60,163 85,664	4,390 29,600 161,200 9,500 6,500 8,100
I920. Ja nuary Fe bruary March April May June  Total Average this year Average last year	2,729.31 3,143.49 3,334.29 3,576.81 3,393.71 34,255.17 2,854.60	154,700 137,625 161,375 148,800 151,450 140,500 	89, 477 67, 564 84, 822 89, 058 80, 183 82, 676 929, 127 77, 427 73, 756	58, 400 4, 900 3, 700 77, 100 286, 700 196, 300 70, 525 8, 573

Note.—Although the total expenditures for this year are considerably less than for the preceding year, it will be noted that the output is materially greater. This is due to the manufacture of oxygen gas by the electrolytic instead of the chemical process.

Table No. 6.—Operation of Panama Canal dry docks.

	Balboa.								
		Vessels docked.							
Month.	Operating expense.	Panama Canal.			Commercial.				
		Number.	Number.	Tonnage.	Number.	Tonnage.			
July. August September. October. November. December	\$9, 190. 35 10, 485. 48 10, 985. 58 11, 071. 83 9, 306 14 9, 654. 08	2 3 4	1 2 2	17,000 9,151 1,235	2 2 2 4 2 3	6,532 6,608 7,554 16,171 19,581 19,410			
January February March April May June	10, 334. 32 9, 694. 36 10, 792. 40 10, 920. 89 11, 787. 03 11, 074 39	4 5 2 3 7	4 4 1 2	1, 940 1, 940 153 1, 250	3 5 5 3	4,283 16,970 14,586 18,400			
Total. Average per month this year Ayerage per month last year	125, 296, 85 10, 441, 40 8, 947, 23	30 2+ 5-	16 1+ 1+	32,669 2,722 1,466	34 2+ 4+	148,039 12,337 21,077			

Table No. 6.—Operation of Panama Canal dry docks—Continued.

	Cristobal.							
		ed.						
Month.	Operating expense.	Panama Canal.				Commercial.		
		Number.	Number.	Number.	Tonnage.			
July August September October November December 1920. January February March April May June Total Average per month this year Average per month last year	\$1,503.81 1,615.98 2,648.82 1,308.89 1,177.58 2,710.15 1,272.27 1,643.07 1,418.94 1,414.89 3,321.61 16,533.99 26,570.00 2,214.17 2,102.47	5 2 1 1 1 1 4 1 4 1 20 2- 4-	3 2 4 1 1 3 3 3 2 1 22 2- 4+	201 501 1,781 50 	3 7 3 3 5 4 1 4 2 3 4 4 4 4 4 3 3	903 6,326 2,746 2,953 7,602 9,700 2,605 4,010 2,363 3,630 3,630 3,392 3,367 		

<sup>&</sup>lt;sup>1</sup> Variation due to maintenance work.

Table No. 7.—Locomotive mileage and operating expenses, road service.

				•			
	Month.			Mileage.	Water (gailons).	Coal (pounds).	Fuel oil (gallons).
	1919.						
July					4,330,708	623, 680	244,574
August				28,097	3,666,096 4,441,936	790, 920 778, 340	246, 292 245, 936
September October			25,157 24,744	3, 870, 286	616, 860	252, 472	
November	24,340	3, 472, 979	614, 280	229, 773			
December	29, 216	3,526,520	792, 400	277, 464			
	1920.				, , , l		
January		,		28,575	3,742,950	630, 760	266,550
February				25, 894	3, 903, 589	352, 680	289,680
March				28,701	3,893,612	333,040	276, 994
April			<del>.</del>	27,689	3,411,953	269,640	282, 049
May				25,706	3,813,662	268, 200	244, 518
June				28,362	3,840,384	273, 220	306,305
Total			· · · · · · · · · · · · · · · · · · ·	325, 790	45, 944, 675	6,344,020	3, 162, 446
	Total	Total		Repairs. Grand total			Cost per
Month.	lubricant cost.	hostling cost.	Heavy.	l ight.	Total.	cost.	mile.
1919.							
July	\$54.42	\$1,640.70	\$4, 167, 63	\$2, 248.77	\$6, 416. 40		
August	46, 25	1,650.20	3, 111. 26	1,391.10	4,502.36		. 64
September	48. 94	1,720.35	2, 584. 17	478.33	3, 062, 50 4, 139, 78		. 66
October	47. 81 44. 01	1,642.57 1,683.91	823. 32 610. 37	3,316.46 2,168.15	9 778 59	14, 723, 67	.61
December	48, 84	1,709.29	801, 59	1,350.13	2,778.52 2,151.72	16, 514, 72	. 57
	10.01	1,100.20	1.011.00	2,000.20		10,011	
1920.	49, 81	1,756.92	601.25	1,052.99	1,654.24	14, 981, 85	. 53
January	49. 25	1,770.92	920. 27	1, 127, 21	2, 047. 48		. 65
March	53, 55	1,652.26	1,358.83	2,757.71	4,116.54	16, 265, 94	. 56
April	54, 95	1,654.33	3, 593, 49	2,017.44	5, 610. 90		. 64
May	59, 67	1,867.83	1,648.30	2, 438, 08	4,086,38		
June	50.10	1,659.25	4,579.00	2,601.91	7,183.94		
Total	607. 60	20, 409, 53	24, 799. 48	22, 969, 28	47, 750, 76	201, 850, 15	. 62

Table No. 8.—Locomotive engine days and operating expenses, yard service.

				1		s, gara sere	
Month.			Engine days.	Water (gallons).	Coal (pounds).	Fuel oil (gallons).	
July			525 586 585 613 479 569	2, 472, 292 2, 185, 654 2, 555, 414 2, 303, 214 2, 003, 271 1, 951, 230	1,353,440 1,791,220 1,428,840 1,677,760 1,243,740 1,550,900	38, 602 28, 774 43, 777 39, 859 49, 503 46, 896	
January. February March April May. June				552 525 605 537 529 591	2, 067, 550 1, 790, 411 2, 026, 638 2, 021, 997 2, 104, 838 2, 037, 616	1,363,400 1,021,440 1,403,580 847,620 1,735,480 1,035,280	48, 270 60, 262 69, 633 64, 726 74, 044 81, 498
Total				6,696	25, 520, 125	16, 452, 700	645, 844
Month.	Total lubricant cost.	Total hostling cost.	Heavy.	Repairs.	Total,	Grand total cost.	Cost per day.
July 1919. August September October November December	\$48. 63 62. 89 57. 77 57. 92 49. 49 63. 24	\$1,185.39 1,650.20 1,226.49 1,118.98 1,263.34 1,249.04	\$2,941.88 3,811.60 4,715.11 7,975.39 4,773.10 5,749.59	\$5, 106. 18 5, 710. 49 6, 975. 99 5, 448. 10 6, 080. 54 5, 433. 82	9, 522, 09 11, 691, 10 13, 423, 49 10, 833, 64	19,930.99 21,100.16 23,295.36 19,581.01	\$32. 18 34. 02 36. 07 38. 00 40. 88 36. 61
1920. January February. March	62. 52 47. 84 49. 01 56. 70	1, 202, 15 1, 276, 23 1, 211, 16 1, 288, 05	7,032.80 4,080.06 3,372.29 4,804.13	5, 854, 22 3, 281, 93 5, 302, 31 5, 325, 31	7,361.99 8,674.60 10,129.44	15, 433. 75 18, 727. 40 17, 545. 77	40. 23 29. 40 30. 95 32. 70
April May June	58. 97 64. 95	1,351.25 1,099.72	8,508.54 8,326.34	7, 205. 01 7, 059. 09	15,713.55 15,385.43		40. 83 40. 63

Table No. 9.—Car-work repair by classes.

Class.	Heavy.	Light.	Class.	Heavy.	Light.
Passenger. Box. Caboose Coal. Steel dump 40-ton flats 50-ton flats Oil tank	94 10 36 168 24 83	42 604 38 46 362 103 306	Refrigerator Stock Rodger ballast Labor Wrecking United States Army labor Total	36 14 14 1 5 2	43 16 16 143 593 2,315

Table No. 10.—Railway shops.

	Maintenance-of-equipment shop expenses.			
	Indirect expenses.	Direct labor.	Shop expense (per cent).	Transportation expenses.
Roundhouses: Balboa. Cristobal. Car department.	\$26, 560, 24 11, 084, 92 58, 364, 40	\$55, 809. 72 20, 974. 13 206, 758. 14	47. 60 52. 85 28. 22	1 \$25,986.08 1 14,541.32 2 29,162.86

<sup>&</sup>lt;sup>1</sup> Engine-house expenses.

<sup>&</sup>lt;sup>2</sup> Train supplies and expenses.

Table No. 11.—Power cost, Balboa shops.

Month.	Steam.	Oil.1	Electricity.	Air.	Water.	Total.
1919. July		\$18,074.64	\$4,876.85	\$2,431.89	\$1,980.11	\$28,868.87
August September October	1,642.42 1,791.20	16, 738. 08 16, 422. 61 11, 337. 98	6, 222, 74 7, 050, 36 6, 925, 53	4, 231, 96 4, 663, 22 4, 157, 95	2, 197. 22 1, 968. 85 2, 277. 04	30,942,12 31,747,46 26,489,70
November	1, 451, 14	9,079.09	5, 322, 08	4,326.56	2, 165. 72	32,344.59
December	1, 287, 83	10,420.15	6, 120, 09	3,853.96	2, 094. 64	23,776.67
January	1,303.69	10, 322. 96	5, 233. 86	4, 104. 51	1,798.96	22,763.98
	1,431.20	11, 560, 39	4, 448. 30	574. 13	2,773.63	20,787.65
March.	1,395.60	11,474.57	5,678,22	2,903.88	3,079.28	24, 531, 55
April.	1,373.39	11,503.37	8,042,97	4,875.20	2,827.74	28, 622, 67
May	1,181.99	12,630.81	8,916,32	5,447.34	1,559.81	29, 736, 27
June	1,248.80	12, 907, 44 152, 472, 09	8, 683, 10 77, 520, 42	5, 565. 83 47, 136. 43	1,499.87 26,222.87	29, 905. 04 320, 516. 57
Average per month this year	1, 430, 39	<sup>2</sup> 12,706.01	6, 460. 04	3, 928, 04	2, 185. 24	26,709.72
Average per month last year	1, 571, 71	17,622.79	4, 512. 65	3, 635, 06	2, 293. 43	29,635.64

 $<sup>^{\</sup>rm I}$  Includes entire consumption of Panama R. R. locomotives.  $^{\rm 2}$  Reducton due to lesser purchase prices.

Table No. 12.—Statement showing the amount of general Canal overhead added to the cost of mechanical division work for outsiders.

		Shopwork.			Dry dock.		Total
Month.	Division charges.	Amounts billed.	Balance general Canal overhead.	Division charges.	Amounts billed.	Balance general Canal overhead.	general Canal overhead applied.
1919. Balboa: July. August September. October November. December.	\$25, 802, 60 352, 785, 91 108, 929, 60 259, 236, 97 354, 051, 26 197, 985, 26	\$28, 530, 34 388, 602, 30 120, 146, 21 285, 686, 29 389, 628, 47 218, 182, 06	\$2,727.74 35,816.39 11,216.61 26,449.32 35,577.21 20,196.80	\$9,051.60 10,001.73 10,583.08 10,678.08 8,226.14 9,609.08	\$8,344.00 39,034.15 6,460.75 7,961.20 16,327.35 12,853.27	\$707. 60 29, 032. 42 4, 122. 33 2, 716. 88 8, 101. 21 3, 244. 19	\$2,020.14 64,848.81 7,094.28 23,732.44 43,678.42 23,440.99
1920. January. February. March April May June.	212, 322, 40 159, 494, 15 395, 566, 73 107, 547, 67 69, 550, 09 234, 254, 63	229, 020, 11 180, 545, 77 435, 353, 18 118, 567, 13 77, 366, 76 258, 088, 24	16, 697. 71 21, 051. 62 39, 786. 45 11, 019. 46 7, 816. 67 23, 833. 61	8,324,32 9,434,36 8,967,90 9,204,39 9,210,03 7,532,39	6, 462, 19 21, 992, 05 5, 685, 40 10, 293, 09 1, 119, 65 7, 153, 85	1, 862. 13 12, 557. 69 3, 282. 50 1, 088. 70 10, 329. 68 378. 54	14, 835, 58 33, 609, 31 36, 503, 95 12, 108, 16 2, 513, 01 23, 455, 07
Total	2,477,527.27	2,729,716.86	252, 189. 59	110, 823. 10	141, 447. 65	30,624.55	282, 814. 14
1919. Cristobal: July August Scptember. October November. December	31, 187, 97 133, 676, 09 52, 267, 86 68, 457, 37 46, 855, 61 75, 926, 00	34,314,29 147,037,80 57,537,37 75,315,24 51,589,14 83,568,78	3, 126, 32 13, 361, 71 5, 269, 51 6, 857, 87 4, 733, 53 7, 642, 78	978. 81 1, 280. 98 2, 278. 82 1, 233. 89 1, 177. 58 2, 635. 15	1, 431, 30 2, 000, 35 1, 674, 95 1, 623, 55 3, 564, 70 5, 065, 15	452, 49 719, 37 <b>603, 87</b> 389, 66 2, 387, 12 2, 430, 00	3,578.81 14,081.08 4,665.64 7,247.53 7,120.65 10,072.78
1920. January. February. March. A pril. May. June.	128, 841, 56 42, 912, 87 51, 079, 48 99, 223, 22 51, 819, 01 102, 458, 75	141, 732, 73 47, 241, 01 56, 187, 48 109, 301, 62 60, 510, 05 112, 691, 01	12,891.17 4,328.14 5,108.00 10,078.40 8,691.04 10,232.26	1,272,27 1,643.07 993.94 1,282.89 2,670.61 6,358.49	3,419.75 4,324.55 2,564.25 3,480.05 1,949.60 2,026.20	2, 147, 48 2, 681, 48 1, 570, 31 2, 197, 16 721, 01 4, 332, 29	15,038.65 7,009.62 6,678.31 12,275.56 7,970.03 5,899.97
Total	884, 705. 79	977, 026. 52	92, 320. 73	23, 806. 50	33, 124. 40	9,317.90	101, 638. 63
Grand total	3, 362, 233. 06	3, 706, 743. 38	344, 510. 32	134,629.60	174, 572. 05	39,942,45	384, 452, 77

Note.—Figures in heavy-face type denote deficit.

Table No. 13.—Mechanical division, fiscal year 1919-20.

Status as of June 30, 1920:

Cristobal     43,323.54       Reserves:     891,378.34       Repairs to machinery     9,367.43       Repairs to buildings     13,575.94       Repairs to structures     4,740.90       Gratuity (accrued leave and holiday time)     239,300.08       Depreciation:     239,300.00       Cranes     2,182.22       Autos     336.93       Dry dock     330,000.00       Stock on hand     2 32,519.15       Work in progress:     32,920.54       Balboa     548,357.27       Cristobal     786,089.53       Total     1,182,740.03	Overhead expense: Balboa. Cristobal.	\$47,852.50	Credit.
Reserves:       9,367.43         Repairs to buildings.       13,575.94         Repairs to structures       4,740.90         Gratuity (accrued leave and holiday time)       239,300.08         Depreciation:       2,182.22         Autos.       336.93         Dry dock       30,000.00         Stock on hand       232,519.15         Work in progress:       32,920.54         Balboa       548,357.27         Cristobal       237,732.26         786,089.53	Cristobal.	43, 525. 84	\$91, 378, 34
Repairs to buildings       1 3,575,94         Repairs to structures       4,740,90         Gratuity (accrued leave and holiday time)       239,300.08         Depreciation:       2,182.22         Cranes       2,182.22         Autos       336.93         Dry dock       30,000.00         Stock on hand       2 32,519.15         Work in progress:       32,920.54         Balboa       548,357.27         Cristobal       237,732.26         786,089.53			401,070.01
Repairs to structures     4,740,90       Gratuity (accrued leave and holiday time)     239,300.08       Depreciation:     239,832.47       Cranes     2,182.22       Autos     336.93       Dry dock     30,000.00       Stock on hand     232,519.15       Work in progress:     32,920.54       Balboa     548,357.27       Cristobal     237,732.26       786,089.53	Repairs to machinery		
Gratuity (accrued leave and holiday time)     239, 300.08       Depreciation:     239, 832.47       Cranes     2, 182.22       Autos     336.93       Dry dock     30,000.00       Stock on hand     2 32, 519.15       Work in progress:     32, 920.54       Balboa     548, 357.27       Cristobal     237, 732.26       786, 089.53	Repairs to bindings.  Repairs to structures.		
Depreciation:     2, 182, 22       Cranes     336, 93       Dry dock     30,000, 00       Stock on hand     2 32, 519, 15       Work in progress:     32, 920, 54       Balboa.     548, 357, 27       Cristobal     237, 732, 26       786, 089, 53	Gratuity (accrued leave and holiday time)	239,300.08	
Cranes     2, 182, 22       Autos     336, 93       Dry dock     30,000, 00       Stock on hand     2 32, 519, 15       Work in progress:     32, 920, 54       Balboa     548, 357, 27       Cristobal     237, 732, 26	Danraciation:		239, 832. 47
Dry dock     30,000.00       Stock on hand     2 32,519.15       Work in progress:     32,920.54       Balboa     548,357.27       Cristobal     237,732.26	Cranes	2,182.22	
Stock on hand     2 32, 519. 15       Work in progress:     32, 920. 54       Balboa     548, 357. 27       Cristobal     237, 732. 26       786, 089. 53			
Stock on hand.       32,920.54         Work in progress:       548,357.27         Cristobal.       237,732.26         —       786,089.53	Dry dock	30,000.00	
Balbóa. 548, 357. 27 Cristobal 237, 732. 26 ————————————————————————————————————	Stock on hand		
Cristobal. 237, 732. 26 786, 089. 53		5 40 0 CT 0 C	,
786,089.53	Patrona. Cristohal	237 732 26	
Total 1 182 740 03		201, 102. 20	786, 089. 5 <b>3</b>
	Total		1 182 740 03

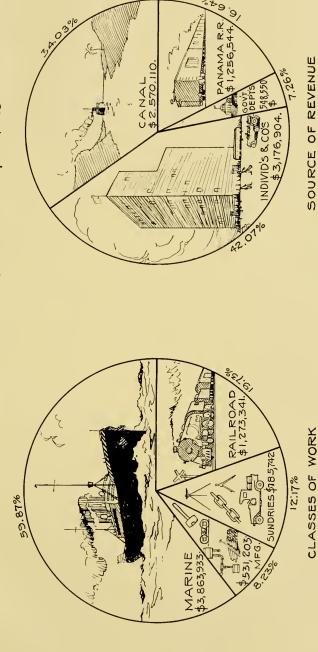
<sup>&</sup>lt;sup>1</sup> Debit. Temporary condition due to the scaling and painting of the structural steel in the shop buildings during May and June.

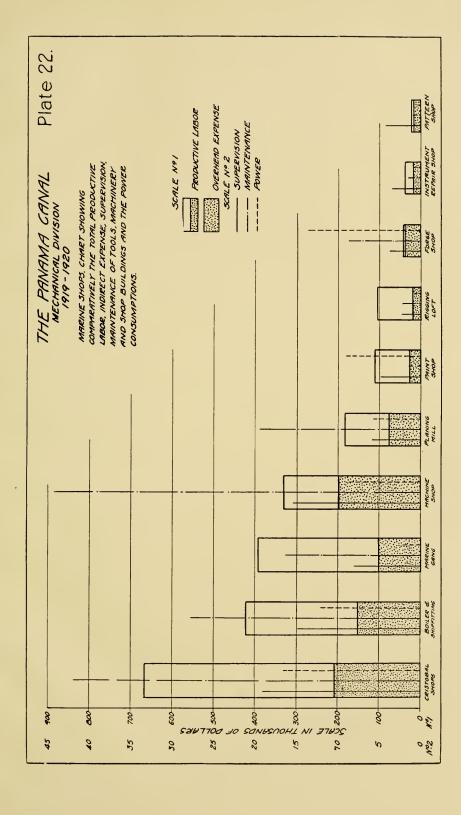
<sup>2</sup> The total amount of depreciation set aside for the Balboa dry dock since the account was established, July, 1917, is \$90,000.

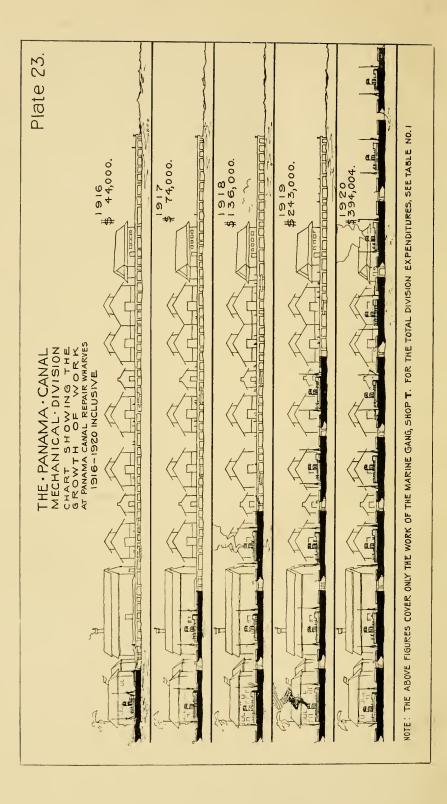


# THE PANAMA CANAL MECHANICAL . DIVISION

CHARTS SHOWING CLASSES OF WORK & SOURCE OF REVENUE







# APPENDIX D.

# REPORT OF THE CHIEF QUARTERMASTER, SUPPLY DEPARTMENT.

Balboa Heights, Canal Zone, July 30, 1920.

SIR: I have the honor to submit the following report covering the operations of the supply department for the fiscal year ended June 30, 1920:

# ORGANIZATION.

The organization of the department continued substantially the same as outlined in the annual report of June 30, 1919.

# PERSONNEL.

There has been no material change in the personnel. Mr. R. K. Morris continued as chief quartermaster; Mr. Roy R. Watson as superintendent; Mr. J. J. Jackson as general manager, commissary division; Mr. W. B. Brown as superintendent, cattle industry division; and Mr. M. D. Smith as general storekeeper.

# LABOR.

In June, 1919, the silver force was 17,071 and the gold force 3,290, or a total of 20,361. In June, 1920, the force consisted of 17,023 silver employees and 4,608 gold employees, or a total of 21,631 actually working. This increase of 1,318 gold employees is partially due to the employment of a number of gold employees to replace silver employees at the time of the strike, and also the employment of gold skilled help in the building and mechanical divisions. There will probably be a material reduction in both gold and silver forces within the next few months.

There was considerable labor unrest during the year which culminated in a general strike of the silver employees on February 24.

During the year adjustments in silver rates of pay were made on July 1, 1919, and February 1, 1920. A further adjustment was made on July 1, 1920. In each case such adjustments were based on the increased cost of living.

The number of silver employees on the rolls each month through-

out the year was as follows:

July	January 18, 214
August	February
September	March
October	April
November	May
December	

This shows a fluctuation between the maximum and minimum number of men on the rolls of 1,988 men, or 11 per cent, based on the average number of men employed throughout the year.

# QUARTERS.

Applications on file for family quarters for gold\_employees on June 30, 1919, were 306, as compared with 618 on June 30, 1920. The quarters situation has been considerably congested, occasioned partly by the number of men returning from military service, all of whom were placed at the head of the list for assignment to first quarters available of the class to which they were entitled when they entered the service of the Army or Navy.

The number of applications on file for silver family quarters on

June 30, 1920, were as follows:

D. Q. M., Balboa Heights.	44
D. Q. M., Pedro Miguel D. Q. M., Gatun	6
D. Q. M., Cristobal.	690
Total	747

The following buildings were transferred from Las Cascadas to other districts for use of gold employees as quarters:

7 type 15's to Pedro Miguel for use of 7 families.

3 type 7's to Pedro Miguel for use of 4 families.
3 type 7's to Cristobal for use of 6 families.
2 type 7's to Gatun for use of 2 families.
1 type 16 converted into bachelor quarters and moved to Balboa (building located near coaling plant for use of operators).

One quarantine detention building at Balboa no longer needed by the health department was converted into eight apartments for gold employees' families. Six ward buildings for nerly a part of Ancon. Hospital were converted into 22 sets of quarters for gold employees' families.

Thirty-nine 12-family houses and ten 32-room bachelor houses have been authorized by the Panama Railroad Company for use of dock and coaling plant laborers at Cristobal. The usual rent of \$5 per month per family and \$2 per bachelor will be charged to employees occupying these quarters. Twenty-four families were assigned during the month of June to two of the houses which were all of the lot that had been completed during the year.

A building located in the Panama Railroad yards, Panama, formerly used to house two families of gold employees was converted into a six-apartment house for silver employees, as it was considered that the location and construction of the building made it undesir-

able for continued use to house families of gold employees.

Camp Otis, village of Las Cascadas, which had been abandoned by the Army, was turned back to the Canal in October, 1919. Some of the better buildings were removed to other districts and recrected for use of gold employees, the remainder being left for the purpose of providing homes for silver employees who were temporarily out of work and where they could support themselves and families at a nominal expense and would not be subject to the general rules in regard to vacating quarters when employment is terminated, should

they be employed temporarily while living in this settlement. village suits this project very well, as it is not in close proximity to active units of the Canal and therefore does not interfere with them. West Indian families are permitted to rent a set of quarters at a rate of \$2.50 per month, with 50 cents additional for each hectare of land which they desire for gardening, poultry raising, and growing of fruit trees. The colony was started in November, 1919, and at the end of June, 1920, there were 40 families who had taken advantage of the opportunity to have a home at a nominal cost.

Twenty-six garage stalls were built at Balboa, 10 at Cristobal, and 8 at Pedro Miguel from funds appropriated for this purpose during

the fiscal year ending June 30, 1919.

# ZONE SANITATION.

Garbage collection for the Canal Zone has been carried on by the supply department in all districts except Cristobal and Army and Navy reservations. Incinerators were operated at Pedro Miguel and Gatun by the supply department but were handled by the health department at Cristobal and the municipal engineering division at Balboa. The cost of handling garbage for the fiscal year ending June 30, 1920, was \$28,606.38, as compared with \$20,935.13 for the previous year.

# MOTOR TRANSPORTATION.

Additional Ford trucks were purchased during the year to meet the requirements of the various divisions in handling material. supply department has operated the greater part of all the motor transportation for the Canal, exceptions being with cars driven by repair mechanics, where complete repair kits and small quantities of repair material are kept aboard the cars for emergency use, such as electrical and telephone material, and where lockmen and coaling plant and oil plant men have to be transported quickly to their work to handle ships.

Vehicles on hand and operated by all departments.

	1919	1920
Ford cars, ½-ton delivery	78	57
-ton trucks }-ton trucks }-ton trucks	47	78 7
}-ton trucks (electric) -ton trucks	3	16 3
Ford passenger cars Combination passenger and delivery, changeable	11 4	16 17
Hearse	$\begin{bmatrix} 1\\7 \end{bmatrix}$	8
Motorcycles Bus, 1½-ton	56	58 1

The above transportation is used by the commissary, electrical, quartermaster, hospital, post office, and mechanical divisions; police and fire division not included. Reduction in one-half ton delivery cars accounted for by conversion to combination, 12; to passenger, 5; condemned, 1; and to trucks, 2.

#### ANIMAL TRANSPORTATION.

Animal transportation has been further reduced and replaced by motor transportation. The animals that are still in service are used for drawing mowing machines, garbage wagons, and material wagons where roads do not permit the use of motor trucks.

# Animals.

	Horses.	Mules.
Number on hand July 1, 1919. Received during year	39	194
Sold or surveyed Transferred to other departments and cattle industry On hand June 30, 1920.	6 4	17 37 143

# Cattle industry.

	Horses.	Mules.
On band July 1, 1919 Received during year Sold and surveyed Transferred to other departments On hand June 30, 1920.	46 26 2	137 25 2 110

### MATERIAL AND SUPPLIES.

A total of 881 requisitions was prepared and forwarded to the general purchasing officer, as compared with 898 during the preceding year. The total value of material received during the fiscal year was \$7,812,258.86, as compared with \$7,832,845.61 for the preceding fiscal year. The local purchases amounted to \$1,650,271.25, as compared with \$1,452,153.35 for the fiscal year ending June 30, 1919. Material consigned to The Panama Canal came forward in 208 steamers.

On June 30, 1920, the value of material in stock was \$5,249,300.15, as against \$6,001,451.24 on June 30, 1919, not including the value of obsolete material and scrap. The following statement shows material on hand at beginning and end of year and total of all issues from the different storehouses for 1919 and 1920, exclusive of obsolete material and scrap:

	General storchouse.	Cristobal storehouse.	Paraiso storehouse.	Total.
On hand June 30, 1919 On hand June 30, 1929 Issued 1918-19 Issued 1919-20	3,765,999.30 9,479,634.02	\$749, 228. 87 828, 331. 64 2, 078, 800. 88 2, 839, 380. 58	\$919, 458. 67 654, 969. 21 598, 655. 34 746, 944. 04	\$6,001,451.24 5,249,300.15 12,157,090.24 11,966,308.81

#### SALES.

Table No. 3 attached covers total of all classes of sales for the year, showing 95,683 sales, amounting to \$3,025,398.18. Sales to steamships show an increase of \$97,039.85, and 3,265 vessels were handled, as compared to 2,156 for the fiscal year ending June 30, 1919.

During the year a total of 248,294 requisitions and foreman's orders was handled, distributed as follows:

General storehouse	 156, 415
Cristobal storehouse	 76,243
Paraiso storehouse	 15,636

The consumption of cement for the year was 158,089 barrels.

SURPLUS, OBSOLETE, AND SCRAP MATERIAL AND EQUIPMENT.

The Mount Hope obsolete storehouse, under supervision of the storekeeper, Cristobal, was operated as during previous years as a concentration point for obsolete and surplus material. Iron and steel scrap operations were continued at the Mount Hope scrap yard; all other scrap operations, including miscellaneous metals, being transferred to the general storehouse at Balboa, in connection with which there was erected a building to properly house such operations, in-

cluding the reclaiming of material for return to stock.

During the year two scrap shears were purchased and installed at the Mount Hope scrap yard for the purpose of facilitating the cutting and classifying of scrap to conform to Panama Canal scrap classification effective July 1, 1920, with the end in view of securing more favorable prices for Panama Canal scrap. Results to date have been very satisfactory. 'It is anticipated that all scrap now on hand will be cut up, classified, and sold by December 1, 1920, at which time it is intended to transfer the two scrap shears from Mount Hope to the general storehouse, Balboa, where a modern scrap dock was constructed during the year, and where all future scrap operations will be handled.

During the year 20,378 tons American scrap were sold; 13,981 tons at San Francisco, 593 tons at New York, and 5,804 tons in Italy.

Table No. 10 attached indicates status of obsolete and surplus material at the beginning and end of the fiscal year, the receipts and issues during this period, and the balance on hand June 30, 1920.

Table No. 11 herewith shows American scrap operations during the

fiscal year.

The French scrap situation is as follows:

	Tonnage.	Price.	Amount.
On hand June 30, 1919 Received during year 1919-20	None.		\$53, 278. 65
Shipped on Rovetta contract, 1919–20	9. 59	5.65	54. 17
Balance on hand June 30, 1920	9, 420. 26	5.65	53, 224. 48

Table No. 5 attached gives details of sales from the obsolete and general storehouse of surplus, obsolete, and scrap material, equipment, and supplies, the original cost of which was over \$500, to be reported to the Secretary of War.

# FUEL-OIL PLANTS.

Operation of the Balboa and Mount Hope fuel-oil plants continued under the supervision of the general storekeeper during the fiscal year.

Contract to furnish fuel oil was entered into with the West India Oil Co. for 300,000 barrels, at \$1.12 per barrel, delivered into Panama Canal tanks at Mount Hope; and 700,000 barrels, at \$1.29 per barrel, delivered into Panama Canal tanks at Balboa. This contract expired June 30, 1920, but was subject to renewal to December 31, 1920, which option was exercised in view of favorable price covering same.

Construction of two 55,000 barrel capacity concrete tanks, one at Balboa and one at Mount Hope, was started during the year and was

90 per cent complete on June 30, 1920.

Table No. 12 attached indicates total fuel oil handled by the Balboa and Mount Hope fuel-oil plants, in amount 5,620,986 barrels, for 1,195 vessels, including both receipts and issues.

# GASOLINE STORAGE.

Storage of bulk gasoline at Balboa and Mount Hope continued during the year, although none was received, due to difficulty in arranging delivery of this commodity in bulk, except that 484,045 gallons were purchased in containers from the salvaged cargo of the steamship *Olockson*. On account of the deteriorated condition of the containers it was necessary to place this gasoline in tank storage.

# PANAMA CANAL PRESS.

The value of the output of the printing plant was \$158,406.79, an increase of \$10,779.36 over the preceding year. The value of the output of the stationery section was \$203,106.71, an increase of \$45,610.53 over the fiscal year ending June 30, 1919. The combined business of both sections was \$361,513.50, an increase of \$56,389.89 over the preceding year.

The most important feature of the year's work was the installation of the commissary coupon section for the printing of commissary books, which is now in satisfactory working order. It is estimated that this addition will effect a saving of approximately \$30,000

annually over United States contract prices.

The value of stock on hand at the close of the year was \$109,605.55, as compared with \$98,103.52 for the preceding fiscal year. This increase was occasioned by the additional stock required in connection

with printing commissary coupon books.

The total value of material issued was \$158,406.79, as compared with \$147,627.39 for the preceding year. This increase was due to the printing of a standard stock catalogue, foremen's order books, of which only a small supply was left over from the last fiscal year, as well as folders for the Washington and Tivoli Hotels.

The total value of material used in manufacture was \$70,022.28, as compared with \$63,634.43 for the fiscal year ending June 30, 1919. The following table shows the principal items of manufacture:

Books, coupon Pamphlets, etc. Sheets, earbon Time tables Cards, guide, etc. Stamps and daters Cardboard	715,000 153,472 203,700 1,600 361,716 2,968 137,391 3,570,199	Sheefs, ruled Tags, assorted Canal Records Binders Programs Folders. Envelopes.	105, 561 148, 100
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#### SUBSISTENCE.

Mr. Roy R. Watson, superintendent of the supply department, remained in charge of the subsistence branch, assisted by an inspector.

On June 30, 1920, the department operated the hotels Tivoli and Washington on the mainland, the Hotel Aspinwall on Taboga Island, three cafeterias, four popular-priced restaurants, and two lunch rooms for the gold employees. Three labor messes were operated for the silver employees.

The hotels Tivoli and Washington were operated on the European plan and the Hotel Aspinwall on the American plan. Owing to popular demand among the patrons, the Ancon restaurant was transformed into a cafeteria with a combination of à la carte service. The Hotel Washington is owned and financially operated by the Panama Railroad Company under the management of the supply department.

The total amount of salaries and wages for the fiscal year was \$156,151.23, an increase of \$32,296.49, making the proportion of net pay roll to revenue 18.31 per cent, an increase of 1.82 per cent above last year. The increase in pay roll is accounted for by the higher rates of salaries established during the year for both gold and silver employees.

The line restaurants and cafeterias showed a net loss of \$4,758.84 and the labor messes a profit of \$5,516.57. The Hotel Tivoli showed a net profit of \$15,763.47; the Hotel Washington was operated at a

net gain of \$24,046.01.

An increase of revenue is noted in the hotels Washington and Tivoli. This increase is due to resumption of travel of the general public since the restrictions caused by the war have been removed.

# COMMISSARY DIVISION.

The commissary division remained in charge of Mr. J. J. Jackson, general manager. There was an increase in the business of the commissary division as a whole. In the wholesale manufacturing plants there was a decrease of approximately \$780,000. This decrease was due to the decrease in the personnel of the Army and Navy on the Isthmus.

The bakery, coffee-roasting plant, Cristobal laundry, ice plant, milk-bottling plant, and industrial laboratory show an increase in the volume of business over the fiscal year 1919; and the abattoir, ice-cream plant, sausage factory, pickling department, and the Ancon laundry show a decrease. The increase in the Cristobal laundry is due to a steadily increasing steamship business. The increase in the milk-bottling plant is due to the increased production of the local dairy.

While fewer cattle were slaughtered in the abattoir than in 1919, the local consumption was somewhat larger, the decrease being due to the temporary suspension of beef shipments to the Army in the

United States.

Due to the purchasing of Colombian beef on large contracts, the retail prices of beef were kept at approximately the same figures as for the fiscal year 1919.

General market conditions throughout the year have been practically unparalleled, and it has been extremely difficult to secure and

maintain an adequate supply of all commodities. It has been the general policy of the commissary division to hold purchases as low as possible in order that they would not have a large stock of merchandise on hand in case a material reduction in prices took place. This policy has resulted in a reduction of stock on hand and a reduction in investment in commissary stocks.

On account of the market conditions it was found necessary to send a representative of the commissary division to New York to cooperate with the purchasing agent, and as a result very favorable purchases in dry goods were made by taking advantage of spot purchases in the New York market. On account of the general market conditions and the policy adopted, no very large purchases were

made.

The commissary division was probably more seriously inconvenienced by the strike of silver employees than any other branch of the Canal activities. Advance information was obtained that the strike would probably be called and every precaution possible was taken in the way of shipping large stocks to line commissaries from the wholesale units. As a result there was an ample supply of all nonperishable goods on hand at all commissaries when the strike was Silver employees were replaced by gold employees who volunteered from other departments and the plants were kept in operation without serious inconvenience.

# COSTA RICAN AGENCY.

On account of unsatisfactory transportation it was decided to close this agency the latter part of 1919. Necessary notice was furnished the planters before the agency was closed. In view of improved transportation facilities within the past few months it has been decided to reopen this agency, but to confine purchases to vegetables and fruits which could stand shipment, such as oranges, potatoes, etc. The Costa Rican market also offers at times very favorable opportunities for the purchase of sugar and coffee.

CHANGES, ALTERATIONS, AND IMPROVEMENTS IN RETAIL COMMISSARIES.

Tanks for storing kerosene in bulk were installed in the Ancon market and Ancon, Balboa, La Boca, Pedro Miguel, Red Tank, Gatun, and Cristobal commissaries.

A new electric freight elevator was installed in Gatun commissary. and at the Pedro Miguel commissary the ice box was remodeled and

equipped with a small mechanical refrigerating machine.

The two-story building which is to house the new Mount Hope commissary is practically completed. It is of frame construction, 120 by 66 feet 6 inches, and will have 38 retail sections and be equipped with an electric freight elevator, a 6,000-gallon kerosene oil tank, and cold-storage department cooled by mechanical refrigeration. When this store is placed in operation it will handle the business now transacted by Camp Bierd commissary and eventually the silver trade, which is now being taken care of at the Cristobal commissary.

Large sales of commissary supplies were made to naval and Army transports during the last fiscal year, approximately \$37,000 worth of foodstuffs and commissary supplies being sold to the Pacific Fleet in July, 1919. The U. S. A. T. Mount Vernon took \$53,661.28 worth of supplies during her stay at the port of Cristobal, from May 25 to June 5.

# PRODUCTS SHIPPED TO THE UNITED STATES.

Shipments of various products, exclusive of beef, to the United States during the fiscal year were as follows:

Oleo oil, pounds. Oleo stearine, pounds. Inedible grease, pounds. Dried blood, pounds. Cocoa, pounds. Dried tankage, pounds Horns, pounds	127,736 104,116 588,559 141,595 12,839 193,796 51,006	Hides, mule, each Hides, horse, each Skins, calf, each Neatsfoot oil, gallons Middles, beef, set Weazands, beef, each	1,869- 1,618- 26- 33- 583- 311- 3,780- 5,070- 5,576
Hoofs pounds. Bones, pounds.	32, 235	Bladders, each	5,576 9,715

The total value of these shipments was \$589,142.67.

# FRESH BEEF SHIPMENTS.

The following is a statement of beef exported to the United States. Army during the fiscal year:

26,887 hindquarters, total weight	3,055,713
Shipments were made to different ports as follows:	
37 shipments to New York	Pounds. 5, 941, 071
12 shipments to San Juan, Porto Rico	257,091
1 shipment to San Diego, Calif	58, 779
Total	6 256 941

# PUBLICITY.

Increasing efforts have been made to acquaint the steamship trade with the facilities and lower prices of beef and other stores at the Panama Canal terminals. To this end letters have been written to many of the more important steamship companies and items have appeared from time to time in The Panama Canal Record.

# MATERIAL SALVAGED FROM STEAMSHIP "MARNE."

From the wreck of the steamship Marne, which burned to the water's edge in the harbor of Cristobal on January 24, a great quantity of damaged material was received and laundered in the commissary plants. The Cristobal laundry handled 192,157 pieces and the Ancon laundry approximately 70,000 pairs of stockings and 10,000 yards of assorted dry goods.

# CATTLE INDUSTRY.

The cattle industry division, comprising the cattle operations, pastures, plantations, dairy, hog farm, poultry farm, and the operation of the cattle steamers, continued under the supervision of Mr. W. B. Brown.

### PURCHASES.

The delivery of cattle on the contract for 1918–19 was completed with the one hundred and thirty-fourth voyage of the steamship Caribbean, July 19, 1919; there having been left over on the old contract from deliveries to June 30, 1919, a total of 1,063 head, at \$0.0495 per pound.

On February 20, 1919, we closed a contract with the Ganaderia Colombiana for a minimum of 30,000, maximum of 40,000 beef steers. and a minimum of 10,000, maximum of 20,000 canners at a flat rate of \$0.0567 per pound on board the ship, the entire 40,000 to 60,000

head to be accepted by us within 12 months.

Due to the termination of the war, the Army canceled their order for 20,000 head, which they had requested us to purchase in addition to our own requirements in the year 1919-20. As a result of these changes it was necessary to secure a modification of the contract entered into with Colombian interests. The following modifications were agreed to:

1. To cancel all canners. 2. To furnish the maximum of 40,000 head of beef cattle as per specifications in the original contract.

3. To extend delivery date six months, or until January 1, 1921.

In consideration of the above we agreed to increase the price from

\$0.0567 per pound to \$0.0595 per pound.

Shipments of cattle from Colombia under these contracts were continued during the fiscal year 1920. On June 30, 1920, we had 15,833 head still due on contract, which will be transported to the Isthmus between July 1, 1920, and January 1, 1921.

Since signing this contract prices of cattle have shown a steady Cattle which the Canal purchased under contract at \$0.0595 per pound are selling in the local markets of Colombia at

from 9 to  $9\frac{1}{2}$  cents per pound.

With the stock now on hand and under contract we have sufficient beef to last from a year to eighteen months after the termination of the contracts. These purchases have resulted in a material saving to Canal employees in the price of beef and to Army and Navy organizations located on the Isthmus.

Purchase was made in Nicaragua of 1,101 head of cattle at a price of 4 cents per pound. In view of the long haul and consequent increased cost of transportation, 4-cent cattle in Nicaragua were practically no cheaper than 6-cent cattle in Colombia. The Nicaraguan cattle are also not as good quality as the Colombian cattle.

In addition to the above there were purchased in Colombia 6,167 fat hogs at 12 cents per pound; 804 shoats at 11 cents per pound; 826 sows at 12½ cents per pound. Local purchases were made on the Isthmus of 561 fat hogs at from  $12\frac{1}{2}$  to  $15\frac{1}{2}$  cents per pound.

No hogs or cattle were purchased in the United States during the

year.

Open-market purchases made in addition to the above were as follows:

Item.	Unit.	Quantity.	Price.
Chickens.		2,691	\$0.50
Ducks Furkeys		138 1,415	.60 1.75
Eggs Coconuts	Dozen Each	$\begin{array}{c c} 327\frac{1}{2} \\ 7,840 \end{array}$	.75
Coffee Corn	Pound		.01½~.03
Melons Mochillas	do	434 240	.0511 1 2.50
Monkeys 2 Peas	do	25 1,090	3.00 .04
Plantain Frass seed	Each	69, 230 76, 349	. 01
Gocoa		300	. 19

<sup>&</sup>lt;sup>1</sup> Per dozen.

# TRANSPORTATION.

The steamship Caribbean completed 26 round trips to Colombia during the year, bringing to the Canal Zone 11,779 head of beef cattle and various other produce. In addition, general cargo, passengers, and mail were carried. The total number of passengers carried was 376, and the total tonnage of general cargo amounted to 4,141.72, including specie valued at \$321,056.75. This steamer also made two round trips to Corinto, Nicaragua, bringing to the Zone 1,101 head of beef cattle. This ship was placed in dry dock for overhauling in September, being replaced by the steamship Middlebury, and remained there until December 31, 1919, sailing for Corinto, Nicaragua, on that date.

The steamship *Culebra* was not in active service during the entire year. This ship was placed in dry dock on May 10, 1919, for repairs and alterations, and remained there until April of this year, when

transfer to the dredging division was made.

The steamship Middlebury entered the service of the cattle industry division on August 19, 1919, making her initial trip to Colombia on that date. During the year 17 round trips were made between Cristobal and Cartagena, bringing to the Isthmus 11,451 head of beef steers, 4,691 fat hogs, and other miscellaneous cargo, including passengers and mail. The total tonnage of general cargo amounted to 3,202.07, including specie valued at \$338,728.70. A total of 55 passengers was carried. This boat completed her last voyage on January 13, 1920, and was turned back to the United States Shipping Board at 7 a. m. on June 14, 1920.

<sup>&</sup>lt;sup>2</sup> Purchased for health department.

The following table shows the monthly commercial steamship business:

26	General cargo.		Specie.		Mail	Passe	engers.
Month.	Tonnage.	Revenue.	Value.	Revenue.	revenue.	Number.	Revenue.
1919. July. August September October November December. 1920.	1, 463. 80 606. 54 879. 32 848. 02 649. 32 598. 52	\$11,042.14 5,386.87 6,417.85 7,213.59 4,924.27 4,908.21	\$156, 500.00 23, 272.00 132, 800.00 82, 626.70 81, 760.00 25, 542.00	\$1,075.93 140.00 747.01 464.78 534.24 164.26	\$3, 13 5, 90 1, 13 9, 02 15, 73	59 42 4 15 11 17	\$860.00 795.10 80.00 260.00 220.00 300.00
January February March April May June Total	128.05 302.34 395.34 240.93 440.78 790.83	889.38 2,060.92 3,452.90 2,254.11 5,258.44 8,070.57	21,621.00 126,084.00 9,579.75 659,785.45	121.62 711.66 74.76 4,034.26	7.45 9.25 15.08 7.71 2.53 2.26	64 71 78 17 53	1,030.00 1,380.00 1,480.00 305.00 990.00

The total net revenue to commercial steamship business is as follows:

General cargo, net	\$30, 939. 62
Specie	2,017.38
Mail	79. 19
Passengers	
m · ·	10 =00 00

# SALES.

The sales of live stock and poultry during the year were as follows:

	Unit.	To commissary.	To individuals and companies.
Beef cattle	Each	23, 199	2,012
Bulls	do	1	
ows		3	
alves	do	15	1
rigshoats	do	15	104
logs.	do	7,216	12
ows.		249	1
oats		4	
hicks	do	1,124	8
hickens		5,760	104
urkeys	do	1,410	
Oucks	do	1,602	3

# HEALTH.

The health of all stock in general continued very good throughout the year with the exception of the epidemic of anthrax, the deaths from which exceeded those of last year, there being a total of 326 head dying from positive anthrax, and 175 among the beef cattle at Mount Hope not reported as positive but which were undoubtedly anthrax. Eighty-one head died from arsenic poisoning at Caimito

during the month of June, 1920, the origin of which has not been

definitely established to date.

Among the breeding stock we lost 2 Hereford and 6 Durham bulls from tuberculosis and 4 cows from tick fever; among the lean cattle 12 steers died from tick fever and 117 died from other causes, consisting of 20 cows and 5 calves in the breeding stock and 92 steers among the lean cattle; also 45 head of cows from the dairy stock, consisting of 15 Holsteins, which died of tick fever, and 30 native cows from other causes. The total losses from all causes amounted to 768 head for the year. A total of 38,448 head of cattle were handled through the pastures during the year, which gives a loss of less than 2 per cent. Considering the anthrax epidemic, which was unusually severe, and also that we passed through one of the longest and most severe dry seasons known for years, the loss is considered very light. The drought lasted six weeks longer than was expected and, due to being overstocked with cattle, the grass became very scarce. This necessitated the moving of cattle from place to place and careful handling in order not to incur greater losses.

The health at the Margarita hog farm was comparatively good. There was an epidemic of cholera during September which resulted in high death rate. The deaths for the year were as follows: 48 pigs,

240 shoats, 317 hogs, 23 sows, and 4 boars.

The death rate among the sows at Limon hog ranch was high, there being a total of 182. Deaths among the other stock were com-

paratively light.

The results of the operation of the Summit poultry farm have not improved since our report of last year, and in fact, the outlook is far from encouraging. During the year just closed the cost of chicken feed, practically all of which has to be imported from the United States, has advanced materially, adding greatly to the cost of operations. While the actual number of deaths was not as great as last year, there has been no decrease in the death rate among the stock.

#### PASTURES.

On April 1, 1920, the pastures on the west side of the Canal were consolidated and placed under the direct supervision of one gold foreman with headquarters at the new Miraflores camp. This unit

is now known as the Mandingo-Farfan pastures.

On the same date the pastures on the east side of the Canal, with the exception of the Mount Hope beef pastures and the Mindi dairy pastures, were also consolidated and placed under the direct supervision of one gold foreman, with headquarters at Caimito. This unit is now known as the Eastside pastures. This consolidation resulted in a considerable reduction in both gold and silver forces and a notable decrease in the general pasture operating expenses.

The total area cleared and devoted to pastures, according to new surveys, amounts to 46,155 acres, of which 42,065 acres are completed and 4,090 will be completed during the coming six months.

During the year the sanitary department condemned a number of areas, amounting to 5,720 acres. This is a total loss to the cattle industry division of \$154,440 figured on the basis of \$27 per acre. This leaves a total of 40,435 acres.

The total virgin clearing for the year amounted to 4,090 acres, divided as follows:

Westside pastures: Gorgona-Mandingo area.	Acres. 1, 669
TATION AICA	330
Eastside pastures: Bohio area	1,565

The total area recleared amounted to 31,666 acres, being divided as follows:

Mount Hope area	Acres, 3, 025
Eastside pastures:	· ·
Summit.	
Caimito	5,000
Bohio	1,790
Westside pastures:	6, 252
Gorgona-Mandingo area New Mandingo	2 780
Pedro Miguel.	2,076
Farfan pastures	6, 482
•	
Total	31,666

Seeding.—Seventy-six thousand three hundred and forty-nine pounds of grass seed were planted in the various pastures during the year, principally on the new clearing, although there was a small area reseeded.

Fencing.—Approximately 48 miles of new fence were constructed,

including corrals, etc., divided as follows:

•	Miles.
Farfan	29
New Mandingo and Pedro Miguel	
Gambo	$1\frac{1}{2}$
Bohio	$1\frac{1}{2}$
Caimito	2

# PLANTATIONS.

Contracts covering the operation of the following plantations were entered into between The Panama Canal and private contractors.

Bracho Mindi.—Twenty-five acres; contractor, A. Napoleon. Contractor receives payment for three-fifths of papaya shipped to commissary division; other produce two-thirds.

Davis Plantation.—Seventy acres; contractor, Thomas James. Contractor receives payment for two-thirds of all produce shipped in. Chilibre Plantation.—Fifty-five acres; contractor, S. McLean.

Contractor receives payment for two-thirds of all produce shipped in. Frijoles Plantation.—We continued to operate this unit as an

avocado orchard. However, this orchard suffered to a considerable

extent due to the extremely dry season of this year.

Juan Mina Plantation.—The cultivation of the citrus grove continued throughout the year and the prospects for an abundant crop are very promising. A good crop of corn was harvested at this unit and used for feed at the Limon hog ranch. This plantation has been extended to include a branch at the Summit poultry farm. At the latter point 1,064 trees have been planted and are growing in good shape.

Limon Plantation.—This unit was converted into a hog ranch on July 1, 1919, and various improvements in the way of fences, pens, sheds, etc., were made. The initial shipment of breeding stock consisted of 289 sows and 9 boars. Report of operations is found elsewhere under Limon hog ranch. Bananas and other miscellancous items of fruit and vegetables were shipped to the commissary division. Las Cascadas Plantation.—This plantation remained under con-

tract with Mr. W. T. Bardy.

Summit Plantation.—The only plantation operations at this point are the Chinese gardens, Nos. 1 and 2. These gardens have made splendid yield and the produce turned in to the commissary division.

The following statement shows items of produce shipped to the commissary division from the plantations and Chinese gardens:

Item.	Quantity.	Item. Q	uantity.
Akee, each	522	Mustard, pounds	20.771
Bananas, bunches	22,609	Okra, pounds	31,046
Beans, string, pounds	71,098	Oranges, each	. 140, 253
Beets, pounds		Onions, green, bunches	. 145, 271
Bread fruit, pounds	4,616	Papaya, pounds	
Cabbage, pounds		Pears, alligator	4,821
Cane, sugar, sticks	2,072	Parsley, bunches	. 142, 661
Cocoanuts, each	4,834	Peppers, green, pounds	. 34,417
Celery, bunches	32,866	Peppers, hot	. 2,004
Corn, green, ears	2,710	Peppers, sweet	. 3,431
Coco beans, pounds	1,001	Plantain, each	. 32,548
Cucumbers, pounds	178, 249	Peanuts, pounds	. 35
- Egg plant, pounds	95, 524	Pineapples, each	. 3,299
Endive, pounds	62, 567	Pumpkins, pounds	. 77
Ginger, pounds	657	Radishes, red, bunches	. 115,975
Grapefruit, each	9,248	Radishes, white, bunches	. 40,929
Lettuce, pounds	60, 223	Spinach, pounds	. 140,560
Lemons, each	5, 483	Squash, pounds	. 6,211
Limos, each		Tomatoes, pounds	. 14,269
Mangoes, each	57,951	Turnips, pounds	. 385
Melons, pounds	270	Tania, pounds	. 1,200
Mint, bunches	80,491	Yucca, pounds	. 8,260

#### POULTRY FARM.

The egg production for the year amounted to  $7.535\frac{9}{12}$  dozen hen and  $497\frac{11}{12}$  dozen duck eggs, of which  $5{,}339\frac{4}{12}$  dozen hen eggs were sent to the commissary; also  $32\frac{4}{12}$  dozen duck eggs and  $2{,}061\frac{11}{12}$  dozen hen eggs sent to incubator and  $62\frac{2}{12}$  dozen hen eggs were sold to individuals.

#### DAIRY FARM.

The total milk production at the dairy farm amounted to 92,765\frac{1}{2} gallons, of which  $79,458\frac{1}{4}$  were sent to the commissary along with  $6,911\frac{1}{4}$  gallons of cream, and the balance of 11,994 gallons of milk was fed to calves.

Respectfully submitted.

R. K. Morris, Chief Quartermaster.

Brig. Gen. CHESTER HARDING, United States Army, Governor, The Panama Canal, Balboa Heights, Canal Zone.

Table No. 1.—Occupants of Panama Cancl and Panama Railroad quarters. June 30, 1920.

	Gold.			Europeans.			West Indians.		
Place.	Men.	Wo- men.	Chil- dren.	Men.	Wo- men.	Chil- dren.	Men.	Wo- men.	Chil- dren.
Aneon	805	607	482				110	18	15
Balboal	1,210	727 12	1,068	16	12	17	761 48	403 14	84
CorozalPedro Miguel 2	303	190	212	1	1	4	3 529	315	58
Paraiso	6	5	11	42	14	27	349	206	47
Culebra 4	9	5	1	108	70	158	5 122	77	179
Gamboa 6	24	11	10				7 169	57	79
Gatun	200	171	223				654	395	62'
Cristobal 8	1,270	488	540	80	11	11	91,832	385	85'
Total	3,841	2,216	2,553	247	97	206	4,574	1,870	3,64

<sup>1</sup> Includes Palo Seco and quarantine station, 2 Includes Miraflores and Red Tank, 3 Includes 63 Panamanians, 4 Includes Empire, 6 Includes 37 Panamanians,

Table No. 2.—Applications for family quarters on file June 30, 1920.

Stations.	Number.
D. Q. M., Balboa Heights. D. Q. M., Pedro Miguel. D. Q. M., Gatun. D. Q. M., Cristobal.	266 40 124 188
Total.	

Table No. 3.—Sales.

	General storehouse.	Cristobal storehouse.	Paraiso storehouse.	Total.
Number of local sales Number of sales to steamships Number of credit sales.	9,279 1,495 49,061	7,091 1,770 25,189	1,701	18, 071 3, 268 74, 34
Total	59,835	34,050	1,798	95,683
Value of local sales <sup>1</sup>	\$131,975.58 526,926.72 1,036,555.66	\$101,512.00 747,629.46 475,076.59	\$4,332.24 1,689.93	\$237,819.85 1,274,556.18 1,513,322.18
Total	1,695,457.96	1,323,918.05	6,022.17	3,025,698.1

Includes Summit.

I Includes 70 Panamanians.

I Includes Colon Beach and Colon Hospital.

Includes 637 Panamanians, 12 East Indians, and 6 colored Americans.

<sup>&</sup>lt;sup>1</sup> Includes fuel oil sold locally as follows: Balboa, \$47,723.36; Cristobal, \$2,845.10.

<sup>2</sup> Includes fuel oil sold to steamships as follows: Balboa, \$387,328.99; Cristobal, \$562,361.72.

<sup>3</sup> Includes material issued on foreman's orders to Army, Navy, etc., and for work on individuals' and companies' jobs: General storehouse, \$556,206.92; Cristobal storehouse, \$144,829.97; total, \$701,036.89.

Table No. 4.—Value of material received during the fiscal year 1919-20 on requisition.

1			21.98 22.48 31.02	77.07	12. 52 15. 47 30. 29	37.95 11.72 69.58	78. 25 40. 20	88.99	92. 84 75. 13 55. 33 01. 86	294, 49	2,320.70	51.86	311, 555. 55
		Total.	\$5,712,421.98 159,632.48 24.661.02		124, 542, 52 110, 215, 47 10, 260, 29	112, 037. 9 598, 011. 5, 269.		34,588.	7, 543, 792. 8 1113, 475. 1 3, 755. 3 23, 901. 8	33, 33	2,3	7,812,251.86	
		June.	\$584, 359, 92 16, 633, 06	2, 209. 49, 076.	24, 253. 86 9, 538. 94 786. 12	24, 18,	611.54 50.00	6,071.01	739, 478. 24. 724, 968. 90 24, 968. 90 16. 33	1,080.00	1,179.36	778, 253.38	31,878.63
		May.			140.89 4,417.28 586.50	4, 130.84 2, 272.23	17.25 55.20	3, 237. 76	903, 261. 26 3, 432. 77 152. 16 9, 416. 59	2, 405.30	4.00	935, 219. 76	24, 558. 75
0001	1920	April.	4.8544,128,18,8825,683,8 6.23,107,07,10,184.3 9.898,346,19	826.70 65,084.72	9, 134, 36 8, 044, 65 163, 61	13, 057. 31 76, 253. 80	78.00	3,308.98	743, 543. 47 4, 408. 44 2, 106. 50	1,755.63	151, 70	754,085.60	29, 231. 99
		March.	7, 705. 76 7, 705. 76 7, 838. 03	10, 237. 00 42, 618, 26	1,720.44 1,297.74 1,016.01	821.13 34,082.57	87.50 275.25	1,583.51	535, 456. 03 7, 646. 79 84. 75 1, 488. 34	1,996.00	7.50	546, 820.66	30,621.90
		Febru- ary.	376, 560. 488 7, 705. 76	249.50 44,780.11	2, 731. 25 4, 494. 98 368. 78	1,111.11 81,161.38	1,607.07	459,30	521, 825. 75 3, 951. 66 886. 14 1, 119. 42	542.20	633. 50	530, 558. 37	22, 685. 14
		January.	088.75 \$354,166.21 \$756,980,53 \$504,474.13 \$376,507,507,507,507,507,507,507,507,507,507	, 338.10 49,178.22	6, 208, 55 18, 961, 99 1, 344, 02	4, 094. 95 91, 653. 36	170.83 12,628.20	1,440.52	715, 068. 02 8, 602. 76 1, 303. 04 1, 325. 39	1,599.32	68.89	733,946.90	22,679.64
		Decem- ber.	8756, 980, 53 8 10, 671, 41	2,374.05 115,948.18	12, 942. 64 29, 738. 59 4, 130. 34	45, 676. 85 132, 993. 32	7,344.23	1,697.36	1,123,782.55 13,713.20 33.17 1,028.51	o, c <sub>0</sub> ,	12.00	243.12 1,144,335.75	27,721.39
		Novem- ber.	5354, 166, 21 9, 323, 97 1, 065, 20	31,613.04	1, 067. 26 974. 23 802. 73	377. 59 33, 499. 17	375.00 236.00	3,017.31	436, 691. 23 5, 273. 36 108. 11 424. 96		6.75	452, 243.12	20,045.06
	6	October.	8311, 093. 75 3, 535. 32 3, 067. 96	2, 741. 83 12, 680. 26	23, 567. 47 700. 18 179. 50	10, 102, 78 75, 833. 80	3,600.00	851.87	14	Ş -i	67.25	471, 902. 50	27, 256.12
*	1919	Septem- ber.	26, 483. 48 05, 483. 48	40.70	13, 053. 04 8, 661. 79 445. 68	2, 876. 51 14, 863. 98 4, 706. 29	6,919.00	2,128.85	456, 745. 37 11, 846. 77 111. 05 3, 022. 90	5 5	189.75	499, 551.88	23, 497. 55
		August.	03, 674, 90 \$374, 955, 28 \$346, 589, 62 \$311, ( 4, 512, 49   31, 101, 50   26, 483, 48   3, 5, 8, 88, 9, 9, 011, 95, 101, 50   50, 483, 48   3, 5, 8, 8, 8, 9, 9, 011, 95, 101	1,840.74 32,634.99	8, 307. 51 22, 271. 25 115. 00	3,543.80 18,912.43 563.29	916.90 592.08	10, 249. 72	490, 065. 74 23, 091. 03 507. 08 883. 92	4,048.15		525, 760.57	24, 228. 85
		July.	\$303, 674, 90 4, 512, 49 8, 348, 99	69, 987. 30	21, 445. 25 1, 083. 85 322. 00	1,581.04 18,301.81	112.50	542.80	429, 912. 16 4, 288. 77 522. 87 1, 144. 82	2, 852. 24		439, 573.37	27,150.53
			Construction, operation, and maintenance: Suply department(stock) \$3 Printing plant (stock)	Dredging division Electrical division	Alcohology division  Mechanical division  Accounting department  Supply department	chicf quarternaster and subsistence Building division.	Fortifications. Marine division.	nance, general		Fanama Kaliroad Company. Panama Railroad Company (commissary)	Law department	Grand total	Local purchases on the Isth- mus: Coal purchased from Panama Ralirond Com- pany
	88	47-20	——10										

Table No. 4.—Value of material received during the fiscal year 1919-20 on requisition—Continued.

	Total.	\$7,536,45 \$125,906.26 54,129,129,19,34 11,172,49 101,04,92 17,474,18 192,960.78	33,613.58 112,775.20 110,554.61 121,009.97 106,350.07 129,794.06 124,588.35 138,489.44 177,760.98 142,427.74 125,806.04 237,101.21 1,650,271.25
	June.	99 114.05 \$7,536.45 73.358.57 54,129.12 60.314.65 11,172.14 17,548.29 17,472.18 3,102.70 109,445.31	237, 101. 21
	May.		125, 806. 04
1920	April.	\$11, 268, 39 59, 619, 70 8, 884, 28 10, 380, 28 17, 325, 55 5, 287, 78	142, 427. 74
	March.	89, 294. 25 810, 121, 41 811, 268. 39 57, 121, 208. 39 610, 57 722, 30 6611, 65 884. 28 884. 28 16, 385. 71 17, 387. 11 35, 928. 54 5, 287. 78	177, 760. 98
	Febru- ary.	\$9, 294, 25 57, 151, 10 7, 722, 95 7, 553, 11 16, 285, 72 17, 797, 17	138, 489, 44
	January.	\$10, 101. 43 53, 554. 71 8, 815. 95 7, 912. 18 16, 381. 53 5, 142. 91	124, 588. 35
	December.	\$14, 078, 91, 49, 567, 36, 7, 479, 51, 8, 692, 15, 114, 967, 22, 7, 287, 52	129, 794. 06
	Novem- ber.	\$13,046.00 44,971.22 6,459.23 6,835.28 13,961.80 1,031.48	106, 350. 07
1919	October. November.	8, 978, 44, \$11, 526, 45, \$13, 046, 00, \$14, 078, 91, 579, 83, 63, 83, 73, 44, 971, 22, 49, 567, 36, 579, 23, 63, 83, 89, 64, 459, 23, 74, 479, 51, 579, 88, 54, 15, 680, 39, 13, 961, 89, 14, 967, 22, 17, 461, 39, 1, 101, 25, 1, 031, 48, 7, 287, 53	121,009.97
19	Septem- ber.	\$8, 978, 44 47, 924, 83 5, 679, 23 7, 074, 63 15, 888, 54	110, 554. 61
	August.	\$9,150,57 50,827.14 6,047.71 6,917.96 14,502.22 1,100.75	112, 775. 20
	July.	\$11, 686, 91 54, 310, 08 6, 929, 76 6, 566, 14 15, 100, 18	_
		Local purchases on the Isth- mus—Continued. Miscellancous purchases from Panama Railroad Company. Hotels. Tivoli. Prodefure division. Health department. Miscellancous purchases from local merhenats.	Total local purchases on Isthmus

Table No. 5.—Sales of obsolete and scrap material and equipment, July 1, 1919, to June 30, 1920, the original cost of which amounted to more than \$500.

Bills, sale No.	Name of purchaser.	Article sold.	Sale value.
C. S. 141 C. S. 195 C. S. 213 C. S. 213 C. S. 2341 C. S. 334 C. S. 335 C. S. 335 C. S. 767 C. S. 865 C. S. 827 C. S. 827 C. S. 827 C. S. 828 C. S. 1243 C. S. 1298 C. S. 1298 C. S. 1287 C. S. 1387 C. S. 1788 C. S. 1850 C. S. 2081 B. S. 6581 B. S. 7667 B. S. 8031	Vapore. A. Levingston. Capt. C. Ellison	25.75 net tons mixed scrap. 12 net tons mixed scrap. 12 net tons mixed scrap. Motor, gasoline, 99 horsepower, No. K. C. 807. 2 tanks, B. I., 5,776 gallons capacity. Generator, Woods, 24 H. W. 48,200 pounds scrap iron. Barge, steel, coal, No. 56 20 tons rail.  Crane, Loco, 20 tons, No. 44. Boat, tug Chame, W. property. 22,300 pounds miscellaneous scrap. 17,500 pounds miscellaneous scrap. 18 tons scrap iron. 37,400 pounds mixed scrap. 10 tons angles. 25,800 pounds mixed scrap. 10 tons angles. 21,200 pounds miscellaneous scrap iron. 21,540 pounds miscellaneous scrap iron. Scale, track, Fairbanks No. 108. 12,540 pounds miscellaneous scrap. 8 transformers. 21,200 pounds scrap iron. Tractor, Moline. 16,489 tons scrap. 48,000 pounds scrap pipe. 9,279 feet b. m. second-hand native lumber. 300 drums, oil, light, from "Marne" and "Olockson."	600.00 2,500.09

Table No. 6.—Houses, apartments, and occupants, by districts, of gold and silver quarters, as of June 30, 1920.

Districts.	Go	old.	Sil	ver.	Total.		
Districts.	Family.	Bachelor.	Family.	Bachelor.	Family.	Bachelor.	
Ancon-Balboa:							
Houses occupied	465	44	58	34	523	78	
Rooms or apartments	1,065	806	436	162	1,501	968	
Number of occupants	3,715	1,058	1,655	475	5,370	1,533	
Corozal:		· .					
Houses occupied	9	3	1	3	10	6	
Rooms or apartments	11	3	2	17	13	20	
Number of occupants	24	8	6	58	30	66	
Pedro Miguel-Paraiso:	07		100	1,1	107		
Houses occupied	97 188	9 89	100 600	14 117	197 788	23 206	
Number of occupants.	596	114	2,160	385	2,756	499	
Culebra-Empire:	280	114	100 رك	999	2,100	,199	
Houses occupied	9	2	35	3	44	5	
Rooms or apartments	10	2	126	5	136	7	
Number of occupants	îĭ	4	328	45	339	49	
Gamboa-Summit:	~~	-		, ,			
Houses occupied	6	3	13	5	19	8	
Rooms or apartments	12	11	69	27	81	38	
Number of occupants	32	13	193	112	225	125	
Gatun:							
Houses occupied	59	12	62	11	121	23	
Rooms or apartments	164	42	415	122	579	164	
Number of occupants	550	44	1,428	248	1,978	292	
Cristobal:	104	27	71	34	235	61	
Houses occupied	161 440	458	389	117	829	575	
Rooms or apartments Number of occupants	1,392	776	1,646	1,792	3,038	2,568	
Total:	1,092	110	1,040	1, 102	0,000	2,000	
Houses occupied	809	100	340	104	1,149	204	
Rooms or apartments	1,890	1,411	2,037	567	3,927	1,978	
Number of occupants	6,320	2,017	7, 416	3,115	13,736	5, 132	

Table No. 7.—Operation of Hotel Tivoli, July 1, 1919, to June 30, 1920.

Month.	Supplies consumed.	Salaries and wages.	Miscel- laneous expenses.	Total cost of opera- tion.	Revenue.	Surplus.	Deficit.
1919. July August September.	\$6,650.98 6,439.37 5,361.40	\$3,394.97 3,328.46 3,251.99	\$3,461.28 4,147.35 4,011.84	\$13,507.23 13,915.18 12,625.23	\$14,264.30 12,637.15 11,942.35	\$757.07	\$1,278.03 682.88
October November December	6,649.14 6,670.38 7,541.33	3,411.83 3,423.75 3,608.43	6,360.32 4,288.85 3,932.85	16,421,29 14,382.98 15,082.61	12,766.45 14,489.10 14,402.05	106.12	3,654.84 680.56
1920. January February March	8,290.20 8,976.50 8,985.62	3,713.21 3,663.34 4,300.69	5,108.03 4,826.52 7,270.01	17, 111. 44 17, 466. 36 20, 556. 32	20,848.10 25,697.75 26,642.00	3,736.66 8,231.39 6,085.68	
April		4, 477. 97 4, 205. 80 4, 010. 97	4,223.17 5,001.87 4,487.93	16,616.53 18,416.84 14,505.87	20,309.55 20,492.30 11,880.25	3,693.02 2,075.46	2,625.62
Total	88,696.45	44, 791. 41	57,120.02	190,607.88	206,371.35	24,685.40	8,921.93

Net surplus, \$15,763.47.

Table No. 7A.—Summary of operations, Hotel Aspinwall, July 1, 1919, to June 30, 1920.

Month.	Supplies consumed.	Salaries and wages.	Miseel- laneous expenses.	Total cost of operation.	Revenue.	Surplus.	Deficit.
1919. July	\$967. 93 1,887. 53 2,316. 09 1,352. 10 1,730. 75 1,510. 67	\$981.81 1,113.96 1,204.69 1,160.77 1,109.99 1,028.65	\$977. 99 1,521.01 656.00 1,113.37 1,130.63 980.22	\$2,927.73 4,522.50 4,176.78 3,626.24 3,971.37 3,519.54	\$2,298.37 4,473.75 5,015.33 2,314.85 3,628.29 2,680.70	\$838.55	\$629.36 48.75 1,311.39 343.08 838.84
1920. January. February. March April May June.	2,263.42 2,298.12	1,019.53 1,191.05 1,532.97 1,763.33 1,534.85 1,408.91	1,169.51 1,237.70 1,569.62 1,644.14 1,834.92 1,711.53	3,564.50 4,260.23 5,366.01 5,705.59 6,276.38 5,412.46	2,798.61 4,228.93 5,410.88 4,471.42 5,286.51 3,958.40	44.87	765. 89 31.30 1,234.17 989. 87 1,454.06
Total	22, 732. 18	15, 050. 51	15, 546. 64	53,329.33	46, 566. 04	883.42	7, 646. 71

Net deficit, \$6,763.29.

Table No. 8.—Summary of operations of restaurants, July 1, 1919, to June 30, 1920.

Month.	Supplies consumed.	Salaries and wages.	Miseel- laneous expenses.	Total cost of opera- tion.	Revenue.	Surplus.	Deficit.
1919. July	\$41, \$41. 16 38, \$21. 64 37, 652. 55 37, 524. 61 36, 011. 04 37, 414. 71	\$10, 911. 01 10, 403. 17 10, 407. 45 10, 343. 44 10, 266. 67 10, 315. 81	\$4,150.62 5,145.55 4,085.53 3,925.13 4,192.50 4,135.49	\$56, 902. 79 54, 370. 36 52, 145. 53 51, 793. 18 50, 500. 21 51, 866. 01	\$55,715.29 53,404.98 50,668.53 51,963.57 50,336.98 54,124.21	\$170.39 2,258.20	\$1,187.50 965.38 1,477.00
1920. January February March April May June.	43,220.80 40,476.28 45,633.45 45,176.78	10, 402. 41 10, 996. 49 13, 862. 47 12, 325. 58 12, 310. 46 12, 148. 08	4,051.46 4,080.97 4,863.62 3,833.68 4,391.59 6,176.64	57, 674. 67 55, 553. 74 64, 359. 54 61, 336. 04 61, 619. 39 64, 843. 65	56,804.41 58,857.30 61,222.85 62,206.52 61,012.74 61,861.89	3,303.56 870.48	870. 26 3, 136. 69 576. 65 2, 981. 76
Total	495, 239. 29	134,693.04	53,032.78	682, 965. 11	678, 209. 27	6,602.63	11,358.47

 Deficit.
 \$4,755.84

 Indirect expense (not charged)
 27,917.24

 Total
 32,673.0°

 Net surplus on messes—see Table No. 9
 5,516.57

Net deficit on restaurants and laborers' messes if indirect charges for building repairs, fuel, light, etc., had been made. 27,156.51

Above statement includes services for departments and divisions of The Panama Canal.

Table No. 9.—Summary of operations, laborers' messes, July 1, 1919, to June 30, 1920.

Month.	Supplies consumed.	Salaries and wages.	Miscel- laneous expenses.	Total cost of opera- tion.	Revenue.	Surplus.	Deficit.
July	\$11,831.71 11,575.12 10,625.26 10,407.07 9,037.42	\$1,701.16 1,734.35 1,664.71 1,665.48 1,657.51	\$1, 464. 45 1,717.60 1,461.24 1,276.35 1,523.15	\$14,997.32 15,027.07 13,751.21 13,348.90 12,218.08	\$15, 411. 40 15, 165. 78 13, 900. 98 14, 108. 25 11, 975. 96	\$414. 08 138. 71 149. 77 759. 35	\$242.12
December	10,568.76	1,576.25	1,164.10	13,309.11	14,265.63	956.52	
January February March April	10,385.17 15,564.73 17,798.14 8,657.85	1,582.22 1,618.21 3,292.77 1,717.62	1,060.59 897.03 1,627.40 962.72	13,027.98 18,079.97 22,718.31 11,338.19	13,513.29 13,245.82 31,596.22 11,894.52	485.31 8,877.91 556.33	4,834.15
MayJune	7, 232. 35	1,657.11 1,590.80	1,248.13 1,968.86	10, 432. 56 10, 792. 01	9,946.70 9,532.73	10.227.00	485.86 1,259.28 6,821.41
Total	131,210.90	21, 458. 19	16,371.62	169,040.71	174, 557. 28	12,337.98	0,821.41

Net surplus, \$5,516.57.

## Table No. 10.—Obsolete and surplus material (appraised values).

On hand July 1, 1919 Received during fiscal year 1920.	\$161,472.69 114,385.46
Total	275, 858. 15 71, 382. 95
Total	347, 241. 10
Transfers and issues.         130, 334.19           Surveyed and scrapped.         5, 195.00	296, 422, 64
Balance to account for June 30, 1920.	

## Table No. 11.—American scrap operations.

A swigger and share saren	\$5 ne	t ton.	\$7 ne	t ton.	То	tal.
American and shop scrap.	Tons.	Value.	Tons.	Value.	Tons.	Value.
On hand July 1, 1919 Received	17,417.968 6,811.532	\$87,089.84 34,057.66	1,980.40 533.81	\$13,862.80 3,736.67	19, 398. 368 7, 345. 342	\$100,952.64 37,794.33
Total to account for Issued from July 1, 1919, to	24, 229. 500	121, 147. 50	2, 514. 21	17,599.47	26,743.710	138, 746. 93
June 30, 1920	18,813.912	94,069.56	2,214.23	15,499.61	21,028.142	109, 569. 17
Balance on hand June 30, 1920	5,415.588	27,077.94	299.98	2,099.86	5,714.568	29,177.80

## Table No. 12.—Fuel oil handled.

	Balboa.	Mount Hope.	Total.
Number of barrels received by The Panama Canal.  Number of barrels used by The Panama Canal.  Number of barrels pumped for individuals and companies.  Number of barrels sold by The Panama Canal.  Number of barrels representing miscellaneous transfers on tank farm.	508, 326 269, 699	454,628 76,420 3,150,967 394,376 26,648	881, 169 366, 796 3, 659, 293 664, 075 49, 653
Total. Number of ships handled, including Panama Canal craft	1,517,947 347	4, 103, 039 848	5, 620, 986 1, 195

Table No. 13.—Comparative statement of output of manufacturing plants, commissary division, supply department, fiscal years 1916 to 1920.

	1916	1917	1918	1919	1920
Laundry (Cristobal):					
Total number of pieces han-					
dled	3,970,674	3, 649, 814	3,341,613	3,360,443	3,481,718
Value of output	\$94,719.68	\$91,722.87	\$87, 271.73	\$101,746.03	\$124,762.76
Laundry (Ancon): Total number of pieces han-					
dled.	4,509,308	4,094,273	5,642,383	4,988,676	4, 236, 158
Value of output	\$98, 242.83	\$93, 262.51	\$132,047.11	\$132,033.90	\$131, 188. 75
Bakery Total output-Bread, loaves	6 205 846	7, 211, 417	7,504,920	5, 438, 121	E 070 010
Total output—rolls, each	6, 385, 546 1, 093, 792	1, 129, 400	637,656	234,624	5, 278, 213 274, 068
Totaloutput-cakes, pounds.	140, 477	132, 493	81,386	131,708	173,338
Total output—doughnuts,					
dozen Total output—pies, each	50, 982 19, 019	54, 840 28, 559	38,075 48,357	14,654	12,278 46,534
Total output—soda crack-	19,019	28, 339	40,007		40, 00-
ers, pounds				15, 152	37,153
Value of output	\$297,439.63	\$365,962.92	\$539, 239.48	\$454,020.16	\$492, 226. 86
Coffee roasting:					
Roasted coffee produced,	381,630	427, 921	382, 233	336, 354	273,460
pounds	\$83,535.69	\$94,023,30	\$106,584.48	\$96,242.64	\$99,482.56
Ice manufacturing:					
Ice manufactured, tons	39,461	45,044	48,672	52,513	51, 266
Value of output Ice cream plant:	\$230, 834. 69	\$263,507.40	\$282, 297.60	\$287,537.47	\$333,456.00
Ice cream manufactured, gal-					
lons	167,528	163,326	216, 262	252,344°	132, 621
Milk bottled, quarts		386,164	452,697 7,809	399, 997	456, 639
Cream bottled, quarts	\$251,880.93	11,697 \$226,024.22	\$339,926.34	7,710 \$423,623.67	12,538 \$320,252,34
Value of output	\$201,000.00	\$220,024.22	9305, 520.34	0420,020.07	0020, 202. 3
partment:					
Corned beef produced, pounds.	196, 169	188, 271	238, 142	192,998	123,366
Hamburger steak produced,	125,712	135,677	208, 859	186,005	74,618
pounds	120,112	100,077	200,000	180,003	74,010
duced, pounds	8,553	37,718	47,451	67, 241	101, 293
Corn pork produced, pounds.	2,932	12,027	56,687	80,134	29, 196
Tongue produced, pounds	5,450	12,913	9,730 60,144	34,320 60,669	39, 193 50, 763
Ham smoked pounds			65, 208		53, 49
Home-made sausage pro- duced, pounds. Corn pork produced, pounds. Tongue produced, pounds. Bacon smoked, pounds. Ham, smoked, pounds. Miscellaneous sausage pro- duced, pounds.			30,200	02,207	· ·
duced, pounds		10,856	240, 521	288, 846	382,74
Ham, Smoked, pounds. Miscellaneous sausage pro- duced, pounds Shoulder, smoked, pounds Beef, smoked, pounds Ham, boiled, pounds Shoulder, boiled, pounds Value of output				12,409 7,979 1,822	29, 95 25, 77
Ham hoiled nounds				1.822	20,11
Shoulder, boiled, pounds				2,136	
Value of output	\$54,969.67	\$55, 525. 14	\$101,516.07	\$275, 121.87	\$221,781.5
Industrial Laboratory:	0110 170 40	0170 000 70	2077 200 70	2202 000 02	0047 FAC O
Value of output	\$116, 176.40	\$179,363.56	\$275,682.50	\$323, 268. 63	\$347,508.0
Cattle killed, head	7,762	13,180	21,731	31,209	23, 19
Cattle killed, head		13,180 681	21,731 11,483	13,553	23, 199 7, 568
Chickens, turkeys, ducks, etc., killed, each				40.001	
etc., killed, each			41, 435	40,031	9,900
duced, pounds	3,843,377	7, 118, 803	10,788,446	15, 974, 950	11, 335, 12
duced, pounds	1				
3		66, 999	991,903	1,327,268	687, 63
aucea, pounds					
duced, pounds	\$446,882.69	\$927,551.06	\$2,025,280.75	\$3,071,878.15	\$2,315,246.4 \$4,385,905.3

Table No. 14.—Quantities of certain staple articles purchased during the fiscal year ended June 30, 1920, as compared with the previous year.

· <del>· ·</del>		Quan	tity.
	Unit.	1919	1920
	7.		
Groceries and meats:	D 1	00 001 005	00 701 011
Beef, native	Pounds		20,791,21
Butter		481,126 177,217	485,14
Coffee Corn	do	440,770	272, 21 108, 71
Cured and pickled meats.	do	145, 410	406,85
Eggs	Dozon	971, 243	601,23
Fish, canned	Pounde	114,638	618,70
Flour		7,614,491	6,696,49
Fresh meats		159,678	424,37
Hogs		1,853,493	925.71
Milk, evaporated and condensed.	do	2,008,280	2,755,62
Milk, fresh		138,675	165,74
Rice		1,666,753	2,924,65
Sugar		4,147,754	4,343,29
Tomatoes in tins	do	469,000	402, 11
Fresh vegetables:		′ ′	· · · · · ·
Cabbage	do	977,570	1,090,46
Onions		884,858	752,66
Potatoes		6,713,534	6, 232, 07
Yams	do	685, 145	292, 26
Fresh fruits:			
Apples		706, 989	767,84
Grapefruit		200,814	116,01
Oranges	Dozen	215,014	125, 18

Table No. 15.—Comparative selling prices for June 30, 1920, as against June 30, 1919.

			<del></del>
	Unit.	Pri	ces.
	Оше.	1919	1920
Fresh meats:			
Beef, stew (native).  Beef, chuck roast, 3 pounds and over (native).	Pound	\$0.08	\$0.09
Beef, chuck roast, 3 pounds and over (native)	do	.12	. 14
Beef, rib roast, not under 3 pounds (native)	do	. 17	. 19
Beef, rump roast (special)	do		
Beef, rump roast (native)	do	.18	. 20
Beefsteak, sirloin (special)	do		
Beefsteak, sirloin (native)	do	. 18	.20
Mutton, loin choos.	do	.47	. 51
Pork, hams, fresh	do	.32	.46
Pork, loin chops		.45	. 50
Veal, loin choos.	do	.49	. 61
Cured and pickled meats: Bacon, States, breakfast, whole piece	a.	. 55	. 61
Bacon, States, oreaklast, whole piece	00	.50	. 47
Ham, sugar-cured, States, whole piece.		.38	.54
Bacon, breakfast, native, whole piece	00	, 35	. 54
		, 50	
Poultry and game: Chickens, corn-fed.	do.	. 53	. 57
Dairy products:	uo	. 55	.01
Butter, creamery, special	do	. 64	.72
Eggs, fresh.	Dozon	.56	.61
Fish:	D026H	. 00	.01
Codfish, dried.	Pound	. 20	. 18
Fish, fresh (native).	do	. 13	.14
Veretables:		* 20	• • • •
Onions	do	. 10	. 04
Potatoes, white.	do	.031	. 10
Fruits fresh:			
Apples	do	.12	. 15
Grogeries:			
Beans, navy, dried	do	.08	. 10
Coffee, ground, No. 1	do	. 24	.31
Corn, sugar	Tins, 2s	.16	. 16
Flour	Pound	. 07	.07
Lard, compound	do	. 33	. 32
Milk, evaporated	Tins, 1s	. 14	. 15
	Tins, 2s	. 19	. 16
	Pound	. 09	. 13
	Cake	.09	.09
	Sacks, 5s	. 50	.85
Tomatoes	Tins, 3s	.18	. 24

Table No. 16.—Articles purchased by the products buyer in Costa Rica during period from June 30, 1919, to June 30, 1920.

Article.	Unit.	Quantity.	Amount.
Beets	Pound	4, 167	\$58.4
Cabbage Carrots	do		3,830.9 448.8
Grapefruit Oranges, select	Each	99,319	2,470.1 4.874.6
Oranges, tropical Potatoes, sweet.	do	31,465	138.0
Potatoes, white	do	2,547,666	43, 412. 6
Sugar Tomatoes	do	2,029,400 2,608	195, 973. 9 121. 6
Turnips			643.1
Total value	• • • • • • • • • • • • • • • • • • • •		253,602.9

Table No. 17.—More important articles purchased in Haiti during period from June 30, 1919, to June 30, 1920.

None. (Agency discontinued.)

List of the important articles <sup>1</sup> purchased locally, <sup>2</sup> from plantations of the cattle industry, <sup>3</sup> from Corozal farm and Army truck gardens, from local producers and importing agencies, and by the local commissary buyer, Panama.

	** **	Quan	tity.
	Unit.	1919	1920
Bananas	Bunches	28,044	33,630
Do	Dozens	16,868	2,205
Beans	Pounds	70,570	29,784
Celery	Bunches	41,703	46,042
Cocoanuts	Dry	184,630	135,573
Corn, green	Ears	180,115	127,515
Cream	Gallons	3,056	10,059
Cucumbers	Pounds	117, 275	194,094
Eggs, fresh	Dozens	30, 161	6,951
Fish	Pounds	448, 299	429,690
Hogs	do	853, 493	925,716
Lettuce	do	62,666	74,692
limes	Each	562, 364	444.982
Macaroni	Pounds	35,850	92,365
Mangoes	1 odiids	267, 211	234,542
Milk	Gallons	50, 906	92,849
Onions, green	Bunches	203, 197	193, 266
Oranges	Each	1,617,850	261,527
Papaya	Pounds	235, 935	162, 981
Parsley	Bunches	103, 691	167, 142
Pears, allicator	Each	72,316	54, 873
Pineapples	do	58, 198	48,693
Plantalns	do	320,779	1,318,804
Potatoes, sweet.	Pounds	215, 397	9,155
Radishes	Bunches	93,895	150,884
Rice	Pounds	906,415	1,930,400
Spinach	Bunches	76,908	6,156
Do	Pounds	42,858	15,938
Soan	Bars	51,890	5,820
Squash	Pounds	112,578	\$6,660
Sugar	do	1,740,022	1,906,991
Fomatoes	do	54, 494	20,676
Yams	do	898, 329	292, 260
I 3HIS		000,040	202, 200

<sup>&</sup>lt;sup>1</sup> In addition to the products listed, various purchases were made of fruits and vegetables in season and of different commodities, including chayotes, guaves, dasheen, egg plant, endive, mint, okra, peppers, and cow peas.

cow peas.

2 Total value of all local purchases was \$630,108.60.

3 Detail of all supplies received from Panama Canal pastures, plantations, hog and poultry farms, etc., will be included in the report of the cattle industry.

## APPENDIX E.

# REPORT OF THE AUDITOR IN CHARGE OF THE ACCOUNTING DEPARTMENT.

Balboa Heights, Canal Zone, September 7, 1920.

Sir: I have the honor to submit the following report of transactions of the accounting department for the fiscal year ended June 30, 1920:

#### ORGANIZATION.

The following are the important changes in the personnel of the department that took place during the year: Mr. T. L. Clear, after serving for about a year overseas in the Inspector General's Department of the Army, returned during September, 1919, and resumed his duties as collector of The Panama Canal, Mr. E. P. Sine resigning. Mr. A. H. Mohr was appointed deputy collector upon his return from Army service, succeeding Mr. T. F. Roth. Mr. J. H. McLean, paymaster, resigned November 15, 1919, Mr. R. W. Glaw, assistant paymaster, being promoted to the position of paymaster on January 24, 1920. On the same date Mr. C. L. Bryan was appointed assistant paymaster. Judge B. F. Harrah has continued as assistant auditor in charge of the office of the accounting department in Washington, D. C., while Mr. A. C. Whitton succeeded Mr. H. P. Merrill as disbursing clerk when the latter resigned in July, 1919.

#### PAYMASTER.

Disbursements to the amount of \$38,426,733.29 were made during the year by the paymaster. Of this amount the sum of \$15.134. 762 was on account of the Panama Railroad Company. Employees on the gold roll of The Panama Canal were paid \$8,391,066.16, and those on the silver roll \$6,505,810.88, while the sum of \$8,395,094.25 was paid on miscellaneous vouchers. Collections on the pay rolls amounted to \$5,191,946.43. Of this amount the sum of \$4,220,-524.88 was collected for coupon books, the remainder being for miscellaneous items. Of the total collections on pay rolls the sum of \$4,948,704.48 was disbursed directly by the paymaster, Panama Canal, the balance, \$243,241.95, being transferred to the collector's accounts. The American Foreign Banking Corporation was continued as a Government depository, and the Panama Railroad Company also opened an account with the International Banking Corporation. During the year the sum of \$8,820,072, Panama Railroad funds, was transferred to the treasurer, New York. This amount includes \$666,072 mutilated currency, due to rapid deterioration of paper money through climatic conditions. The cash situation on the Isthmus improved somewhat. The sum of \$1,224,000 was brought by the paymaster from the States during the year. (See Table No. 29).

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#### COLLECTOR.

The collections repaid to appropriations amounted to \$14,745,-634.31, as compared with \$10,364,875.07 collected during the prior year. The sum of \$8,848,978.06 was collected for deposit as miscellaneous receipts. Of these amounts there was received by the disbursing clerk at Washington the sum of \$1,486,112.16 as a credit to appropriations, while \$83,109.29 were collected as miscellaneous receipts. Deposits for the payment of tolls and bills for supplies and services were made with assistant treasurers of the United States to the credit of the collector in the sum of \$2,287,783.21. Similar deposits were made with the collector on the Isthmus in the sum of \$18,631,811.32. The deposits with assistant treasurers show a reduction as compared with the previous year of over \$2,000,000, while the deposits on the Isthmus increased over \$6,500,000. Of the total deposits, \$20,919,594.53, which is \$4,476,220.50 in excess of last year's total, the sum of \$455,251.87 was refunded upon settlement of accounts. Money-order funds to the amount of \$1,501,000 were transferred to the Postmaster General of the United States in payment of money orders drawn on the United States. Other disbursements of miscellaneous funds to the amount of \$367,473.46 were made by the collector. Collections were also made on account of the Panama Railroad Company in the sum of \$21,532,848.43, an increase from last year of \$1,991,903.47. (See Tables Nos. 32, 33, 34, and 40).

#### TOLLS.

Tolls actually collected on vessels transiting the Canal during the year amounted to \$8,496,633.40. In addition, the sum of \$14,003.42 was collected for vessels that passed through the Canal during prior fiscal years, making the total amount collected \$8,510,636.82. earned amounted to \$8,516,469.80. Of this, the sum of \$19,836.40 was unpaid, being mainly charges on certain Government-operated vessels that may not be finally held liable for tolls. In addition, there remains unpaid from previous years the sum of \$20,711.08. The total differs from the amount shown on the operation and maintenance statement by the amount of refunds, account of overcharges during prior years (\$10,948.49). Under the ruling of the Attorney General, tolls on vessels with cargo or passengers are collected in accordance with the Panama Canal rules of measurement only in cases where the amount derived by multiplying the Panama Canal net tonnage by \$1.20 per ton is less than the amount ascertained by using the rate of \$1.25 and the net registered tonnage as defined by United States statutes. Had Panama Canal rules been applied in all cases the sum of \$9,955,754.32 would have been collected. The limitation, therefore, resulted in a loss to the Panama Canal during the past fiscal year of \$1,445,117.50, as compared with a loss of \$867,526.48 in 1919, \$1,083,111.69 in 1918, \$1,034,001.88 in 1917, and \$390,714.05 in 1916, or a loss to the Canal since the decision of the Attorney General was applied of \$4,820,471.60. This amount, plus the sum of \$10,948.49, which was the amount refunded during the year under the authority of the act of Congress of June 12, 1917, and \$214,951.12 refunded during previous years on account of the erroneous collections made prior to the ruling of the Attorney General, and approximately \$63,533.03 still to be refunded, gives the total loss to the Canal and the United States Government as \$5,109,904.24. Vessels of American and foreign register have benefited since the opening of the Canal, under the rules of measurement now in force, as follows:

American vessels plying between American ports	\$237, 956, 85
Foreign vessels plying between American ports	67, 881, 50
American vessels plying between American ports and Canal ports	97, 956, 05
Foreign vessels plying between American ports and Canal ports	1, 325, 90
American vessels plying between American possessious and American	, ,
_ ports	34, 908, 60
Foreign vessels plying between American possessions and American	,
ports	43, 495, 75
P	10, 100. 10

The total saving in payment of tolls on all vessels engaged in American trade, as above defined, was \$483,524.65. Of this total, \$57,955.20 consisted of deck loads, \$56,864.40 of which were carried by American vessels and \$1,090.80 by foreign vessels. Vessels engaged in foreign trade, and especially vessels under foreign registry, have been the beneficiaries at a time when the United States has needed revenue from every legitimate source.

### ACCOUNTING TO THE TREASURY FOR COLLECTIONS.

No examination of the collection accounts was made by employees from the offices of the Auditor for the War Department and the Comptroller of the Treasury as contemplated by section 3 of the sundry civil act approved March 3, 1915.

#### CANAL APPROPRIATIONS.

The Congress to June 30, 1920, appropriated for the Canal and fortifications thereof a total of \$467,431,257.41. Of this amount \$34,658,400.81 was for fortifications, \$2,250,000 to cover nine annual payments of \$250,000 each to the Republic of Panama for Canal Zone rights, and \$170,000 for regulating commerce and for the censorship of foreign mail during the fiscal year 1919. The sum of \$43,997,755.68 has been specifically appropriated for the operation and maintenance, sanitation, and civil government of The Panama Canal and Canal Zone. Of the amounts appropriated other than specifically for operation and maintenance, the sum of \$4,289,159 was charged against operation and maintenance to the end of the fiscal year 1915, while \$2,225,000 of the general appropriations for construction have been used under proper authority to pay for a part of the stock of material and supplies for the operation and maintenance of the Canal. Deducting from the total appropriations the amount appropriated for fortifications \$34,658,400.81; for Panama, \$2,250,000; for regulating commerce and censorship of mails, \$170,000; for operation and maintenance (including the amount of the stock of material and supplies), \$50,511,914.68, leaves \$379,840,941.92 appropriated for the construction of the Canal and its immediate adjuncts. This includes the appropriation for presenting the launch Louise to the French Government as a general expense of the construction of the Canal. Of the total appropriated for construction, \$4,329,898 for colliers and coal barges, \$2,093,190 for pier No. 6, Cristobal, \$300,000 for work on the colliers Ulysses

and Achilles, and \$720,000 for reboilering and repairing the steamships Ancon and Cristobal, were specifically exempted by law as a charge against the amount of the authorized bond issue. The sum of \$372,397,853.92 is left chargeable against the bond issue. The balance available for appropriation within the limit of the cost of the Canal and the authorized bond issue is \$2,825,302.08, the actual difference between the amount appropriated and the items which are exempted as a charge against the bond issue being increased by the appraised value of the American Legation Building, Panama, \$22,256, which was transferred to the Department of State. The amount appropriated for the support of the Canal during the fiscal year 1920,

\$9,281,851 is not included in the above figures.

Miscellaneous receipts to June 30, 1920, amounted to \$42,176,261.22. Deducting tolls, \$33,303,581.67, Canal Zone revenues collected since July 1, 1915, \$691,747.26, profits on business operations, \$358,199.05, interest on the cost of public works in the cities of Panama and Colon and on bank balances, \$599,408.88, and miscellaneous collections, \$8,035.68, gives the amount repaid on the cost of construction as \$7,215,288.68. This includes the amount paid by the Panama Railroad for subsidies, dividends and interest, as the Canal would have obtained the benefit of these amounts in reduced rates if they had not been added to the expenses of the railroad. Deducting the amount repaid on the cost of construction and including available balances, there is left the sum of \$365,182,565.24 as the actual present cost of the Canal projects estimated for in 1908. This amount is reduced from year to year by receipts from the sale of construction material and equipment and by additional collections covering expenditures for waterworks, sewers, and pavements in the cities of Panama and Colon. The cost of the Canal as a commercial venture is also entitled to credit for the value of the buildings, public works, and equipment transferred to the Army, the Alaskan Engineering Commission, and to the State Department without any actual payment therefor. The appraised value of items so transferred is \$2,087,342.67, of which \$146,500 was the value of items constructed by the Canal Zone government. (See Tables Nos. 13 and 14.) The status of authorized bond issue is shown in Table No. 1. General ledger items are shown in Table No. 2.

#### CURRENT APPROPRIATIONS.

The cash balance of the current appropriations for operation and maintenance, sanitation, and civil government and for construction, on June 30, 1920, amounted to \$12,347,642.76. Including the amount of the accounts receivable and transfers of appropriations to be made in payment for work done and supplies furnished, the total of the cash and cash items was \$16,325,017.48. The liabilities immediately payable, including the amount to be paid the United States Shipping Board for the two coal barges, which are now in service, amounted to \$6,004,775.71. The additional ordinary obligations outstanding, viz, \$3,601,343.84 on outstanding orders, \$3,480,460.30 on unfilled requisitions, and \$2,234,701.77 on allotments for special work make at total of the regular obligations of \$15,321,281.62, and leave a balance of \$1,003,736.26. This balance is a great deal more than offset by the reserves for repairs (\$484,268.74)

and by the amount due employees for leaves earned (\$813,591.01), a large portion of both of which may be required at any time, and by

the reserves for depreciation on equipment, \$2,442,029.86.

As stated last year, too much stress can not be given to the necessity of keeping the appropriations for Canal operation and maintenance on a continuing rather than on an annual basis, and to the maintenance of an adequate cash balance to carry on the business operations. Work for the Army and Navy has been done on a very large scale in the past and will continue to be done. Delays in payments seemingly can not be avoided. This throws a burden on Canal funds that must be recognized and provided for. The cash balance with which to operate can be provided by a special appropriation, or what is believed to be better and more in keeping with the law relative to the business operations of the Canal, by considering the reserves for depreciation as direct obligations against the appropriations for operation and maintenance. Until an amount equal to the reserves is retained as a part of the cash assets of the Canal, the entire amount appropriated each year must not be expended; the balance must be retained and must not be used as a reason for reducing the amount to be appropriated during the following year. Fluctuations in the value of stock on hand also directly affect the cash balance, and if the value of the stock falls below the amount authorized for investment in stock then the difference must be considered as a direct obligation chargeable to the appropriation at any given time.

#### OPERATION AND MAINTENANCE.

#### [ Tables Nos. 4 and 5.]

The ordinary expenses for operation and maintenance of the Canal, including those of civil government and sanitation, amounted to \$6,548,272.43, as against \$6,112,194.77 expended in 1919, and \$5,920,342.94 expended in 1918. This does not include expenditures for additions and improvements amounting to over \$900,000. The expense of maintenance dredging increased from \$1,152,188.99 to \$1,611,359.78 due to the slides in Gaillard Cut. Operation expenditures show increases due to increased wages, also to the additional force required by increased traffic through the Canal. The civil government expenses show an increase of over \$100,000, the main increase being for schools and the police force. The expenses of the Washington office increased from \$327,798.14 to \$345,572.98, due to some extent to increased compensation following similar increases in other departments in the States. Expenses of the executive office increased from \$416,052.38 to \$513,791.17. The main causes were the creation of the bureau of shipping commissioner as a part of the department of operation and maintenance, and the transfer of all emplovees engaged in clubhouse activities to the force of the bureau of clubs and playgrounds. The overhead expenses charged to maintenance and operation amounted to \$3,324,167.10, as against \$3,382,167.30 charged the prior year. In the overhead expense accounts are included charges for civil government amounting to \$808,658.43, expenses for hospitals, quarantine, and sanitation amounting to \$662,349.90, and \$3,267,430.92 expended for administration, including expenses of the executive department, accounting department Washington office, operation and repairs of storehouses

and quarters, lighting of streets, operation and maintenance of sewer

system and roads.

Offsetting the total expenses for operation and maintenance are the amounts earned as tolls for vessels transiting the Canal during the year—\$8,516,469.80, less refunds, \$10,948.49, and less bills canceled, \$12,438.75 (prior years), or \$8,493,082.56 (this amount differs from the amount actually collected from vessels transiting the Canal because of certain unpaid bills on Government operated vessels); the amounts collected as licenses and taxes, court fees and fines, \$153,102.88, and as profits on business operations, \$239,686.13, a total of \$8,885,871.57. The revenues earned in excess of current expenses amounted to \$2,387,599.14. The charges to operation and maintenance with minor exceptions do not include depreciation of plant and equipment. Interest on the capital investment is also excluded.

The expenditures charged to operation and maintenance to date amount to \$36,657,766.89, to offset which are the total revenues from tolls, civil government collections, and profits on business operations, amounting to \$34,426,675.28, which may be reduced by about \$64,000 when the balance of refunds of tolls erroneously collected is paid. Had Panama Canal tonnage rules been applied, there would be a surplus in revenues over expenses of \$2,600,000. It is evident that by June 30,1921, the collections for tolls and other Canal revenues will exceed by one or more millions of dollars the total current expenses of the operation and maintenance of the Canal to that date, after which there should be an excess of \$5,000,000 or more each

vear.

#### BUSINESS OPERATIONS.

#### [ Table No. 7.]

The total revenue derived from business operations, carried on with Panama Canal funds, amounted to \$14,705,371.82, as against a total of \$13,684,881.18 received during the prior fiscal year, an increase of  $7\frac{1}{2}$  per cent over 1919, and  $42\frac{1}{2}$  per cent over 1918. The cost of carrying on these operations during the last fiscal year amounted to \$14,465,685.69, leaving a net profit of \$239,686.13 to be covered into the Treasury as miscellaneous receipts under the Panama Canal act and the regular Panama Canal appropriation acts. The net profits for the fiscal year 1916 amounted to \$11,898.44; for 1917, \$39,427.66; for 1918 to \$6,159.56; and for 1919 to \$61,027.26. The result is due to the approved policy of making the charges in most cases so as to barely cover the cost. Shop work, work for the Panama Railroad, and other departments of the Government, and all services rendered for employees (and these are the major items) are performed at cost, except that both subsistance and hospital services rendered employees are consistently rendered at a loss. There was an increase in the work performed by the shops, including electrical work, from \$4,277,823.90 to \$5,301,273.65. The value of tug service increased from \$288,675.36 to \$401,144.61. Sales of water increased by \$20,000. The revenues from the use of the dry dock at Cristobal increased over \$15,000. The sales of fuel oil increased from \$1,161,573.74 to \$1,228,133.66. The increase in business operations at the Canal is shown by the increased numbers and amounts of formal bills as follows:

	Number of bills.	Amount.
1915. 1916. 1917. 1918. 1919.	8,686 12,754 16,385 22,070 24,210 28,825	\$12, 197, 170, 74 11, 786, 187, 91 17, 007, 342, 16 20, \$87, 460, 60 25, 272, \$15, 50 28, 654, 781, 64

In addition, Panama Railroad commissary bills increased from 10,733 amounting to \$3,459,038.28 in 1917, to 13,100 amounting to \$4,438,725.57 in 1918, to 13,949 amounting to \$5,249,707.46 in 1919, and to 12,237 amounting to \$6,533,471.27 in 1920. The regular Panama Railroad bills increased from 9,285 amounting to \$8,993,007.41 in 1917, to 9,652 amounting to \$10,282,388.24 in 1918, to 10,036 amounting to \$12,643,489.63 in 1919, and to 11,198 amounting to \$14,795,390.37 in 1920, or a total increase from 1917 to 1918 to 1919 and to 1920, in numbers from 36,404 to 44,822 to 48,195 and to 52,260 in bills, and amounts from \$29,459,387.85 to \$36,008,574.41 to \$43,166,012.59 and to \$49,983,593.28, respectively. In addition, many thousand memorandum bills were rendered for land rent, telephones, garage, electric work, and repairs.

#### MATERIAL AND SUPPLIES.

The value of material and supplies in storehouses on June 30, 1920, amounted to \$5,654,526.04 as compared with \$6,312,836.28 on June 30, 1919. In addition, the divisions had on hand for immediate use material to the value of \$546,618.22. Material issued during the year amounted to \$8,329,558.22 exclusive of that to the Panama Railroad Company. Material and supplies, including fuel oil, were sold for \$2,644,990.68. For the previous year, issues and sales amounted to \$7,967,563.30 and \$1,887,609.25, respectively. The reduction of almost \$1,000,000 in the value of the stock in the storehouses and in the hands of divisions has been reflected in an increased cash balance. (For further information see Tables Nos. 12, 56, and 57.)

#### CONSTRUCTION OF CANAL AND CAPITAL ADDITIONS.

#### [ Table No. 8.]

The expenditures charged to the Canal construction accounts for work done during the year were small as compared with prior year charges, the total amounting to a little over \$1,000,000. The charges to capital additions covering expenditures for permanent improvements, the costs of which were payable from maintenance and operation appropriations, amounted to a little over \$900,000; the principal items chargeable to construction with unit costs where available were dredging inner harbor, Balboa, \$34,916.25, involving the removal of 63,050 cubic yards of material at an average division cost of \$0.4991 per cubic yard; of this material 84 per cent was earth and 16 per cent rock (see Table No. 23); sanitary fills and ditches, \$9,503.54; settlement of claims for private property within the Canal Zone, \$546,217.05; buildings, \$19,877.26, the main item being

the completion of Ancon Hospital buildings; the new garbage incinerator at Cristobal, \$115,873.52; and Pier No. 6, Cristobal, \$113,-There were also transferred to the construction accounts about \$900,000 which had heretofore been tentatively charged in the capital addition accounts; the main items, with the approximate amounts involved were dredging Cristobal Harbor, \$130,000; extensions to the electric current system, \$233,000; fuel-oil plants, \$82,000; shops, \$186,000; work on locks, \$160,000; aids to navigation, \$53,000. There remains to be expended under construction appropriations \$2,329,898 for the two new coal barges; \$250,000 for work on the colliers Ulysses and Achilles; \$325,000 for dredging; and \$81,000 for the payment of land claims with certain other small amounts which make a total of a little over \$3,000,000. The main items of expenditure under capital additions were extension to the power and lighting system, \$84,858.56; addition to fuel-oil plant, \$90,219.50; new garages, \$20,425.56; fills, roads, water and sewer systems, New Cristobal, \$187,369.43; terminal storchouses and shop buildings, Cristobal piers, \$46,182.33; fenders, Miraflores locks, \$9,623.32; road, Balboa shops to Diablo, \$34,452.44; repairs to Docks 13 and 14, \$32,481.84; quarters for gold employees, \$183,000; quarters for silver employees, \$48,000; and miscellaneous, \$87,061.14.

#### MANUFACTURING PLANTS.

The new Gatun hydroelectric plant and the Miraflores steam electric power plant generated 55,300,094 kw. hours during the past year at

an average cost of \$0.0094 per kw. (See Table No. 26.)

The Ancon-Balboa-Panama waterworks system produced 2,790,-202,000 gallons of water at an average cost of \$0.0745 per thousand gallons. Of this amount 1,026,782,000 gallons were used in the city of Panama. The Gatun system produced 427,714,000 gallons of water at an average cost of \$0.1378 per thousand gallons. The Colon-Cristobal system produced 2,157,686,000 gallons at an average cost of \$0.0609 per thousand gallons. Of this amount 625,374,000 gallons were used in the city of Colon. (See Tables Nos. 27, 28, and 29.)

The sand and gravel reclaiming plant produced a total of 119,618 cubic vards. The average division cost of this sand and gravel was

\$1.40 per cubic yard. (See Table No. 25.)

## PUBLIC WORKS, PANAMA AND COLON.

Under the agreement with the Republic of Panama, which requires reimbursement within 50 years from July 1, 1907, for the expenditures incurred by the United States for the construction, operation, and maintenance of waterworks, sewers, and pavements in the cities of Panama and Colon, the expenditures for construction to June 30, 1920, in Panama have amounted to \$1,430,208.91, and in Colon to \$1,220,382.03, a total of \$2,650,590.94. The total expenditures for operation and maintenance were \$911,083.54 for Panama and \$798,127.58 for Colon. Besides being authorized to currently reimburse itself from water-rental collections for the expenses of operation and maintenance, the United States gradually liquidates the expenditures for construction by a quarterly charge equal to one-

quarter of the part of the capital cost ascertained by dividing the amount thereof by the number of years the contract has to run. In addition, the Republic of Panama pays interest at the rate of 2 per cent per annum on the capital cost balances and on the proportionate cost of waterworks in the Canal Zone used for supplying water to the two cities, based upon the quantity of water consumed. For the work in Panama, this interest has amounted to \$293,602.26; for the work in Colon, \$249,073.16; and for the proportionate cost of waterworks in the Canal Zone, \$123,991.09, a total of \$666,666.51. To liquidate the capital cost there has been paid to the United States, or is immediately due, the sum of \$563,442.21, leaving a balance unpaid of \$1,106,926.48 for the work in Panama, and \$980,-222.25 for the work in Colon, a total of \$2,087,148.73, payable in installments during the contract period. The amount which is payable immediately under the agreement is \$94,179.05, and is covered by bills for the difference between the current charges for the work plus the quarterly payments required and the amount collected as water rentals. The Panama Canal continues to maintain the pavements in the two cities under the temporary agreement reached at the beginning of the fiscal year 1918, whereby reimbursement is still obtained through the water-rental collections.

#### EXCHANGE OF PROPERTY WITH PANAMA RAILROAD COMPANY.

The exchange proposed in 1917 of certain property of the Panama Railroad Company which is either used by The Panama Canal or is a part of the general terminal facilities owned by The Panama Canal, for certain property of The Panama Canal used by the Panama Railroad Company, together with the cancellation of the notes standing against the Panama Railroad Company, still remains to be effected. It will very much improve the relationship of the two interests if this exchange is ultimately effected.

#### EXAMINATION OF PAY ROLLS.

There were 403,231 pay-roll items, 55,556 gold and 347,675 silver, audited prior to payment. Sixty-five errors, involving \$274.58, were discovered by the Auditor for the War Department upon final audit of Panama Canal rolls amounting to \$15,141,321.37. Only \$20.17 were collected from clerks responsible for the errors. The gross deductions on the rolls amounted to \$6,650,009.19, of which \$5,628,691.24 were for commissary books and \$657,175.70 for Victory loan notes and interest thereon, the balance being for miscellaneous purposes—silver rentals, Red Cross, hospital charges, etc. Numerous changes were required on the pay rolls because of the general increases in wages to silver employees effective July 1, 1919, and February 1, 1920, also on account of increases in the building trades effective July 1, August 1, and October 1, 1919, and February 1, April 1, and June 1, 1920. The pay rolls, both silver and gold, with almost no exception, are now written on the addressographs, as are the time books and pay receipts.

#### INSPECTION OF ACCOUNTS.

To examine the accounts of officers and employees charged with the collection, disbursement, and custody of Panama Canal and Panama Railroad funds, or with other funds which are held by such persons on account of their official positions, 347 examinations were made of the accounts of employees of The Panama Canal, while 164 were made of the accounts of the Panama Railroad Company. At the close of the year there were 116 Panama Canal and 49 Panama Railroad accounts subject to inspection.

#### TIME INSPECTION.

There were 10,442 gangs inspected during the year, involving the checking of 519,859 employees. Six hundred special reports were made by inspectors calling attention to errors of various kinds. The actual saving during the year on account of corrections made by the time inspection force is comparatively small—\$3,822.90—but the general benefit of the inspection force can not be questioned.

#### FREIGHT CLAIMS.

There were 2,851 new claims for losses or damage to freight received, the amount claimed approximating \$322,000. This is an increase of 683 claims and \$104,000 over the prior year. The sum of \$41,651.20 was paid in adjustment of claims assumed by the Panama Railroad operations on the Isthmus; in addition \$53,077.24 were charged against the steamship line accounts. This is an increase of over \$8,000 for the railroad and \$30,000 for the steamship line.

#### CLAIMS FOR DAMAGES TO VESSELS.

Two claims for damages to vessels passing through the locks, amounting to \$7,243.51, were settled in accordance with the provisions of section 5 of the Panama Canal act; also two claims, amounting to \$2,361.98, for damages done in the Canal outside of the locks. Damages to a number of vessels were repaired at an expense of \$5,179.12, making a total of \$14,784.61, all adjusted without recourse to the courts. The previous year the total payments and cost of repairs amounted to \$16,739.19.

#### BONDS OF EMPLOYEES.

The schedule bond of employees of The Panama Canal and Panama Railroad Company, executed to insure the faithful performance of their duties, was continued with the Maryland Casualty Co. The total liability for Panama Canal employees was \$430,000, and for Panama Railroad Company employees, \$381,000. No claim was made during the year against the surety company for defalcation of employees. The total cost for the year was about \$1,200.

#### COUPON BOOKS.

The strip coupons have been continued in use through the year. All books have been printed at the Panama Canal press, a new printing press having been especially constructed and installed for this purpose, with the resulting decided reduction in the cost of the books in spite of the heavy increase in the cost of paper and all other expenses connected with printing. Books to the value of \$5,627,605, being \$1,100,000 in excess of the amount issued during the preceding year, were issued to employees for pay-roll deduction. Books to the value of \$2,099,832.50 were sold for cash, the total for the year amounting to \$7,727,437.50, as against the total for the preceding year of \$6,510,997.50. There were also used during the year by silver employees meal tickets to the value of \$46.329.50, a reduction of \$21,000 from the amount used the preceding year. (For further details see Tables Nos. 37–39.)

#### CANAL ZONE ACCOUNTS.

The balances, unexpended in the old Canal Zone funds account, \$6,220.11, were deposited in the Treasury as miscellaneous receipts, as there were no further obligations outstanding against such items. The collections for licenses and taxes during the year amounted to \$15,354.05; court fees and fines \$27,694.45; postal receipts, \$109,-117.48, with miscellaneous items amounting to \$57,210.07, a total of \$209,376.05. During the prior year the sum of \$136,876.29 was: deposited. The cash balance of miscellaneous trust funds, which include clubhouse and money-order funds in the hands of the collector, have increased from \$683,085.95 on June 30, 1919, to \$780,-757.96 on June 30, 1920. During the year 125,122 money orders, to the value of \$3,198,989.98, were issued, as against 140,618 to the value of \$3,108,678.27 during the previous year, or an increase of \$90,311.71. This increase was due to the fact that employees no longer invest savings in Liberty bonds. Since the establishment of the money-order business on the Isthmus, 2,454,002 orders have been issued to the value of \$57,524,064.81. There have been paid \$40,152.048.33 on money orders drawn on the United States. Tables Nos. 41–45.)

#### CLUBHOUSE ACCOUNTS.

The revenues derived from the operation of the various clubhouses amounted to \$427,118.67, as compared with \$463,409.39 received during the prior fiscal year. The expenditures amounted to \$452,-600.34. Soda-fountain receipts amounted to \$132,237.49; cigars and candies, \$138,073.10; moving pictures, \$36,747.87. The items for soda fountain and cigar and candy accounts show a large decrease over the prior year's receipts, caused by the opening up of the Army and Navy Y. M. C. A.'s. The moving-picture receipts show an increase over the prior year, while the receipts from membership fees were reduced from \$808 to \$90, caused by the discontinuance of these fees. The cash balance on hand June 30, 1920, amounted to \$61,107. In addition there were commissary coupons, \$10,131.50, and outstanding accounts, \$6.44, making a grand total of cash and

cash items of \$71,244.94. The year's business operations resulted in a loss of \$15,197.14, reducing the surplus from \$78,021.25 to \$62,824.11. (See Tables Nos. 46-49.)

#### CLAIMS FOR INJURIES AND DEATHS.

On July 1, 1919, there were pending four death cases and 141 injury cases. Three of the death cases were approved for payment and one was disallowed on account of having no legal dependents. Sixteen of the injury cases were disallowed; the remainder, if the time lost exceeded three days, were approved for payment. During the past fiscal year there were reported 4,451 accidental injuries and 17 accidental deaths of employees, as against 3,308 injuries and 23 deaths during the preceding year. Compensation was allowed in 1,471 cases of injury and 3 cases of death. In 199 cases no compensation was allowed, the reasons being:

	Cases.
Injured person not an employee	. 1
Insufficient evidence to establish claim.	. 73
Injury not sustained in performance of duty	. 29
Disability not the result of injury claimed	92
Failure to give notice of injury as required by act	. 1
Intention to cause injury to self or another	

In three cases of death no dependents were found, and in one the death was not caused by the injury claimed. Ten death cases are pending. On account of injuries and deaths occurring during prior years, there were paid to employees for injuries \$17,705.17; to beneficiaries for deaths of employees \$3,946.67; to persons injured during the year there was paid the sum of \$25,123.68, and to beneficiaries of employees who died as result of injuries received in line of duty, \$549.83. The beneficiaries included 1 widow and 13 children. In addition there was paid to one person under the Executive order of March 20, 1914, the sum of \$1,073.95. Sixteen lump sums, averaging \$988, were paid to injured employees. Three lump sums, averaging \$510, were paid to beneficiaries of employees. Two monthly payments of compensation to beneficiaries were discontinued, one on account of death and the other on a finding of non-dependence.

On June 30, 1920, 35 beneficiaries, 1 widow, 31 children, and 3 parents were carried on the rolls for monthly payments. Thirteen former employees were being carried on the rolls on account of apparent disability, 7 of them being totally disabled and being paid the maximum compensation. The injury board, consisting of the chief health officer, the auditor, and the head of the department in which the employee was working at time of injury, met approximately once a month to determine the loss of carning capacity of injured employees, and the number of cases considered at each meeting varied from 5 to 13. Many claims were based on trivial injuries and were disposed of by referring the injured person to the head of his department or division for duty. Others involved considerable correspondence and personal interviews with the injured employee, his attorney, his diplomatic or consular representative, before any final disposition of the case could be made. In all cases of lump-sum payments the recipient was paid upon his departure from the Isthmus, except one widow who chose to remain here.

The payment of \$1,200 to five crippled inmates of Corozal farm was authorized upon their repatriation. Four of these persons have been paid and have left the Isthmus. The claim officer has conducted many investigations in injury and death cases not falling under the compensation act. Reports in 170 such cases, including reports of injuries to property, were received, many of which required extensive inquiries. These investigations have been made at the request and in cooperation with the counsel for The Panama Canal and Panama Railroad Company. The attention of the heads of departments and divisions has in many cases been called to dangerous places, with the result that many safeguards to life and body have been installed.

The policy relative to making payments was modified somewhat during the year with the result that fewer lump-sum payments were made. The payment of compensation in monthly installments, especially to children, was deemed desirable. It has been found that the majority of gold employees who were for a short period of time disabled are unwilling to accept compensation at the maximum rate—\$66.67 per month. One hundred and eleven of these employees had the time lost by them from work charged against their leave. 72 only accepting payment under the compensation act.

(See Tables Nos. 50-55.)

#### OPERATIONS WITH PANAMA RAILROAD COMPANY'S FUNDS.

The accounts of the railroad company show the results of the operations of the railroad proper, harbor terminals, coaling plants, stables, baggage transfer, and motor-car machine shop carried on under the direction of the superintendent of the railroad; of the telephone system under the electrical engineer of The Panama Canal; of renting of lands and buildings under the land agent and special attorney; of the Hotel Washington, commissaries, plantations, cattle, poultry, hog, and dairy farms under the chief quartermaster of The Panama Canal.

A reclassification was made during the year of all Panama Railroad assets on the Isthmus, showing in more complete detail the principal items of this property, also the reserves for depreciation, which was set up under a corresponding classification. New accounts were opened for revenues derived from coal and from beef cattle, so as to show the sales to various interests, such as commercial, Panama Canal, United States Army and Navy, individuals and companies, etc. A revised classification of accounts was prepared and issued in pamphlet form.

## RAILROAD, HARBOR TERMINALS, ETC.

Due to the increase in operating costs, the net revenue of the railroad proper decreased \$165,010.65 as compared with the prior

year, leaving a profit of only \$20,868.77.

The net revenues from harbor terminal operations amounted to \$136,718.19, a decrease of \$205,981.28, as compared with the previous year. Gross revenues increased \$82,386.62 but the gross expenses increased \$288,367.90.

The gross receipts from coal sold were \$7,243,559.55, and the value of this coal, including operating expenses, was \$6,274,147.44. The

resulting profit for the year was \$989,402.11 as compared with

\$810,379.83 for the previous year.

The motor busses were continued in operation to the end of July only, resulting in a loss of \$1,328.24. The Panama stables, which were leased during the preceding year for a monthly rental, show a net revenue return of \$965.54 above the cost of extraordinary repairs and depreciation, against a loss of \$5,974.38 the previous year when the stables were operated by the Panama Railroad. The operation of Colon stables resulted in a loss of \$2,436.82. Baggage transfer service operated at a profit of \$4,459.28, an increase of \$3,307.08 over the previous year. The loss in operating motor-car machine shop decreased from \$2,575.83 to \$1,606.93 for the year ending June 30, 1920. The cost of operating the telephone system was \$17,534.60 in excess of revenues.

The net revenue from rental of land was \$104,188.40 and buildings \$4,093.90, an increase over the previous year of \$4,201.25. The operation of the Hotel Washington shows a profit for the year of \$24,046.01, an increase in net revenue of \$12,656.77 over the previous year. Of the amount of the net revenue for the last two years \$30,000 was set up as a reserve for depreciation of building, no charge having been made heretofore on account of the hotel operat-

ing at a loss prior to the fiscal year ended June 30, 1919.

#### FARM INDUSTRIES.

The gross revenue from plantation products shows an increase of \$12,948.28 over last year, and the operating expenses a decrease of \$17,810.51, resulting in a loss for the year, however, of \$16,276.60, compared with a loss of \$47,035.39 for the corresponding period of the previous year.

Poultry farm.—The revenue derived from the sale of poultry and eggs during the year was \$18,924.24, the cost of which was \$28,035.19

in excess of the revenue.

Hog farm.—The cost of operating the hog farm was \$78,196.34. The receipts from hogs sold and turned into the abattoir were \$159,460.71, the cost of which was \$175,682.55, including operating expenses, resulting in a loss for the year of \$16,221.84.

Dairy farm.—The operating expenses of the dairy farm were \$83,074.39 and the products disposed of, consisting of milk, cream, and calves, amounted to \$78,697.74, an increase in gross receipts over last year of \$32,729.73, resulting in a loss of \$6,787.29, a decrease in loss compared with the previous year of \$35,594.61.

Catile.—To provide for the increasing demand for beef cattle the commercial steamer Middlebury was chartered from the United States Shipping Board, and after being refitted at Balboa shops for this service the steamer was used part of the year for transporting cattle from Colombia in conjunction with the steamers Culebra and Caribbean. There were 25,241 head of cattle imported by the three steamers during the year, and a total of 25,222 head was sold or turned in to the abattoir for \$2,136,932.05. The resulting loss on cattle operations, \$189,973.39, was in reality due to the breaking of the agreement by the Army to purchase beef as the much larger importation of cattle that was expected would have enabled the spreading of the expense over a larger number of head of cattle. The cost of refitting, maintenance, and operation of the cattle steamers amounted to \$706,826.07, of which the sum of \$363,292.25 covered the extraordinary expenses of refitting the steamship *Middlebury* for the cattle service, the expense of overhauling and refitting the steamship *Culebra* as a dredge, and extensive repairs on the steamship *Caribbean*.

#### COMMISSARY.

Gross receipts from the sale of commissary supplies amounted to \$12,407,421.06 as compared with \$11,237,646.33 last year. Supplies were purchased to the amount of \$10,190,983.14, including \$2,044,035.16 for cattle, poultry, and hogs purchased on the Isthmus. The net profit amounted to \$276,093.40 as compared with \$267,282.07 last year, a very small amount when compared with the \$10,000,000 investment in supplies, plant, and circulating funds. The profits on the steamship sales amounted to more than this sum. The value of supplies on hand June 30, 1920, was \$2,638,715.72.

#### GENERAL.

The result of all operation of the Panama Railroad on the Isthmus shows a net revenue of \$1,069,472.78, a decrease of \$333,228.38 for the corresponding period last year. During the present year \$2,834,233.08, representing completed improvements, were added to the capital account, including \$74,254.17 transferred from The Panama Canal. In addition to this there remains authorized for improvements \$1,907,631.84, of which \$1,111,892.10 were expended up to June 30, 1920. The principal items authorized and under construction are railroad buildings, \$33,200; railroad passenger equipment, \$124,000; roadways and track yards at Cristobal pier, \$65,000; commissary plants and stores, \$152,000; new Colon fill, Mount Hope, silver townsite, and other real estate improvements, \$1,189,000; new stables, Colon, \$142,000; dredging basin for equipment at Cristobal coaling plant, \$153,000.

Detailed statements of revenue, expenses, and statistics of all railroad industries, including steamship line, will appear in the regular railroad annual report. Essential data only are contained herein to cover in a general way all the operations of the railroad on the

Isthmus.

Respectfully submitted.

H. A. A. Smith, Auditor, The Panama Canal.

Brig. Gen. Chester Harding, United States Army, Governor, The Panama Canal, Balboa Heights, Canal Zone.

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## THE PANAMA CANAL.

Table No. 1—Status of authorized bond issue.

10012 21012 000000 00000			
Authorized bond issue. Appropriations by Congress to June 30, 1920.		\$467, 431, 257, 41	\$375,200,90 .00
Less a propriations for—	<b>63</b> 4 858 400 81	. 101, 101, 2011 11	
Less a propriations for— Fortifeations	2, 250, 000.00		
ernment of anal, and increased compensation.	43,997,755.68		
Regulation of commerce	50,000.00		
		81, 076, 156. 49	
Appropriated for Canal construction Less amount exempted by law—		386, 355, 100. 92	
Less amount exempled by law— 2 colliers. 2 barges. Dock No. 6, Cristobal Equipping colliers Ulysses and Achilles. Covering unprotected surfaces of colliers. Repairs to steamships Angon and Cristobal, its	2,000,000.00		
Dock No. 6, Cristobal	2,000,000.00 2,329,898.00 2,093,190.00 259,000.00		
Equipping colliers Ulysses and Achilles	259,000.00		
Repairs to steamships Ancon and Cristobal, to June 39, 1915.			
Expended for operation and maintenance of Canal Stock of material and supplies for operation and	720,000.00 4,289,159.00		
maintenance of Canal	2,225,000.00	10.055.045.00	
		13,957,247.00	372, 397, 853. 92
Balance available for appropriation after Ju	ne 30, 1920, with	in limit of cost	
of Canal and authorized bond issue Appraised value of American I egation building in the c	tv of Panama.	exempted from	2,803,046.08
charge to bond issue, act of July 1, 1916			22,256.00
Balance available for appropriation within	the limit of co	st of Canal and	2 825 302 08
Amount appropriated, charged to bond issue			2,825,302.08 372,397,853.92
Amount appropriated, charged to bond issue.  Amount re-aid to construction appropriation, account of ments, Panama and Colon.	waterworks, sev	vers, and pave-	396,956.06
Expended or available for expenditure			
CLASSIFIED STA			, ,
	EBMENT.		
ODASSTI DE STA	Expended to	Unexpended	Total.
· ·	1	Unexpended allotments.	Total.
	Expended to		Total.
Construction of Canal.	Expended to June 30, 1920.	\$147,400.00	
Construction of Canal.	Expended to June 30, 1920.	allotments.	
Construction of Canal.	Expended to June 30, 1920.	\$147,400.00	
Construction of Canal. Prism excavation. Locks Dams and spillways. Breakwaters. Aids to navigation.	Expended to June 30, 1920.	\$147,400.00	Total.  \$137, 337, 892. 93 74, 515, 978. 56 17, 771, 615. 81 9, 062, 077. 94 879, 619. 33
Construction of Canal.  Prism excavation	Expended to June 30, 1920.  \$137, 190, 492. 93 74, 515, 978. 56 17, 771, 615. 81 9, 062, 077. 94 868, 619. 33	\$147,400.00	\$137, 337, 892, 93 74, 515, 978, 56 17, 771, 615, 81 9, 662, 077, 94 879, 619, 33
Construction of Canal.  Prism excavation. Locks. Dams and soillways. Breakwaters. Aids to navigation.  Auxiliary works.  Electric power and transmission system. Coaling stations	Expended to June 30, 1920.  \$137, 190, 492. 93 74, 515, 978. 56 17, 771, 615. 81 9, 062, 077. 94 868, 619. 33  6, 140, 391. 04 5, 964, 365. 94	\$147,400.00 11,000.00	\$137, 337, 892, 93 74, 515, 978, 56 17, 771, 615, 81 9, 662, 077, 94 879, 619, 33
Construction of Canal.  Prism excavation. Locks. Dams and soillways. Breakwaters. Aids to navigation.  Auxiliary works.  Electric power and transmission system. Coaling stations	Expended to June 30, 1920.  \$137, 190, 492. 93 74, 515, 978. 56 17, 771, 615. 81 9, 062, 077. 94 868, 619. 33  6, 140, 391. 04 5, 964, 365. 94	\$147,400.00 11,000.00	\$137, 337, 892, 93 74, 515, 978, 56 17, 771, 615, 81 9, 662, 077, 94 879, 619, 33
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Construction of Canal.  Prism excavation. Locks. Dams and soillways. Breakwaters. Aids to navigation.  Auxiliary works.  Electric power and transmission system. Coaling stations	Expended to June 30, 1920.  \$137, 190, 492. 93 74, 515, 978. 56 17, 771, 615. 81 9, 062, 077. 94 868, 619. 33  6, 140, 391. 04 5, 964, 365. 94	\$147,400.00 11,000.00	\$137, 337, 892, 93 74, 515, 978, 56 17, 771, 615, 81 9, 062, 077, 94 879, 619, 33  6, 140, 391, 04 5, 964, 365, 94 704, 239, 69 3, 613, 030, 42 3, 314, 854, 70
Construction of Canal.  Prism excavation. Locks. Dams and soillways. Breakwaters. Aids to navigation.  Auxiliary works.  Electric power and transmission system. Coaling stations	Expended to June 30, 1920.  \$137, 190, 492. 93 74, 515, 978. 56 17, 771, 615. 81 9, 062, 077. 94 868, 619. 33  6, 140, 391. 04 5, 964, 365. 94	\$147,400.00 11,000.00	\$137, 337, 892, 93 74, 515, 978, 56 17, 771, 615, 81 9, 062, 077, 94 879, 619, 33  6, 140, 391, 04 5, 964, 365, 94 704, 239, 69 3, 613, 030, 42 3, 314, 854, 70
Construction of Canal.  Prism excavation. Locks. Dams and soillways. Breakwaters. Aids to navigation.  Auxiliary works.  Electric power and transmission system. Coaling stations	Expended to June 30, 1920.  \$137, 190, 492. 93 74, 515, 978. 56 17, 771, 615. 81 9, 062, 077. 94 868, 619. 33  6, 140, 391. 04 5, 964, 365. 94	\$147,400.00 11,000.00	\$137, 337, 892, 93 74, 515, 978, 56 17, 771, 615, 81 9, 062, 077, 94 879, 619, 33  6, 140, 391, 04 5, 964, 365, 94 704, 239, 69 3, 613, 030, 42 3, 314, 854, 70
Construction of Canal.  Prism excavation. Locks. Dams and soillways. Breakwaters. Aids to navigation.  Auxiliary works.  Electric power and transmission system. Coaling stations	Expended to June 30, 1920.  \$137, 190, 492. 93 74, 515, 978. 56 17, 771, 615. 81 9, 062, 077. 94 868, 619. 33  6, 140, 391. 04 5, 964, 365. 94	\$147,400.00 11,000.00	\$137, 337, 892, 93 74, 515, 978, 56 17, 771, 615, 81 9, 062, 077, 94 879, 619, 33  6, 140, 391, 04 5, 964, 365, 94 704, 239, 69 3, 613, 030, 42 3, 314, 854, 70
Construction of Canal.  Prism excavation. Locks. Dams and soillways. Breakwaters. Aids to navigation.  Auxiliary works.  Electric power and transmission system. Coaling stations	Expended to June 30, 1920.  \$137, 190, 492. 93 74, 515, 978. 56 17, 771, 615. 81 9, 062, 077. 94 868, 619. 33  6, 140, 391. 04 5, 964, 365. 94	\$147,400.00 11,000.00	\$137, 337, 892, 93 74, 515, 978, 56 17, 771, 615, 81 9, 062, 077, 94 879, 619, 33  6, 140, 391, 04 5, 964, 365, 94 704, 239, 69 3, 613, 030, 42 3, 314, 854, 70
Construction of Canal.  Prism excavation. Locks. Dams and spillways. Breakwaters. Aids to navigation.  Auxiliary works.  Electric power and transmission system. Coaling stations. Fuel-oil plants. Dry docks. Wharves, piers, and docks (exclusive of Dock 6). Playgrounds. Landscare improvements Water and sewer systems and roads. Sanitary fills and ditches. Townsites. Improvements Cristobal Harbor. Dredging inner harbor and entrance basin. Preraratory work Balboa terminal. Floating caisson.	Expended to June 30, 1920.  \$137, 190, 492. 93 74, 515, 978. 56 17, 771, 615. 81 9, 062, 077. 94 868, 619. 33  6, 140, 391. 04 5, 964, 365. 94	\$147,400.00 11,000.00	\$137, 337, 892, 93 74, 515, 978, 56 17, 771, 615, 81 9, 662, 077, 94 879, 619, 33
Construction of Canal.  Prism excavation. Locks. Dams and spillways. Breakwaters. Aids to navigation.  Auxiliary works.  Electric power and transmission system. Coaling stations. Fuel-oil plants. Dry docks. Wharves, piers, and docks (exclusive of Dock 6). Playgrounds. Landscare improvements Water and sewer systems and roads. Sanitary fils and ditches. Townsites. Improvements Cristobal Harbor. Dredging inner harbor and entrance basin. Preraratory work Balboa terminal. Floating caisson.  Miscellaneous items.	Expended to June 30, 1920.  \$137, 190, 492. 93 74, 515, 978. 56 17, 771, 615. 81 9, 062, 077. 94 \$63, 619. 33  6, 140, 391. 04 5, 964, 365. 94 704, 239. 69 3, 613, 638. 630. 42 3, 314, 854. 70 34, 847. 85 4, 615, 798. 61 347, 808. 15	\$147,400.00 \$11,000.00 11,000.00 72,600.00 106,700.00	\$137, 337, 892, 93 74, 515, 978, 56 17, 771, 615, 81 9, 062, 077, 91 879, 619, 33  6, 140, 391, 04 5, 964, 365, 94 704, 239, 69 3, 613, 030, 42 3, 114, 854, 70 54, 474, 41 34, 847, 85 4, 615, 798, 67 793, 980, 34 923, 338, 07 235, 219, 80 3, 656, 841, 96 1, 808, 921, 65 347, 868, 15
Construction of Canal.  Prism excavation. Locks. Dams and spillways. Breakwaters. Aids to navigation.  Auxiliary works.  Electric power and transmission system. Coaling stations. Fuel-oil plants. Dry docks. Wharves, piers, and docks (exclusive of Dock 6). Playgrounds. Landscare improvements Water and sewer systems and roads. Sanitary fils and ditches. Townsites. Improvements Cristobal Harbor. Dredging inner harbor and entrance basin. Preraratory work Balboa terminal. Floating caisson.  Miscellaneous items.	Expended to June 30, 1920.  \$137, 190, 492. 93 74, 515, 978. 56 17, 771, 615. 81 9, 062, 077. 94 \$63, 619. 33  6, 140, 391. 04 5, 964, 365. 94 704, 239. 69 3, 613, 638. 630. 42 3, 314, 854. 70 34, 847. 85 4, 615, 798. 61 347, 808. 15	\$147,400.00 \$11,000.00 11,000.00 72,600.00 106,700.00	\$137, 337, 892, 93 74, 515, 978, 56 17, 771, 615, 81 9, 062, 077, 91 879, 619, 33  6, 140, 391, 04 5, 964, 365, 94 704, 239, 69 3, 613, 030, 42 3, 114, 854, 70 54, 474, 41 34, 847, 85 4, 615, 798, 67 793, 980, 34 923, 338, 07 235, 219, 80 3, 656, 841, 96 1, 808, 921, 65 347, 868, 15
Construction of Canal.  Prism excavation. Locks. Dams and spillways. Breakwaters. Aids to navigation.  Auxiliary works.  Electric power and transmission system. Coaling stations. Fuel-oil plants. Dry docks. Wharves, piers, and docks (exclusive of Dock 6). Playgrounds. Landscare improvements Water and sewer systems and roads. Sanitary fils and ditches. Townsites. Improvements Cristobal Harbor. Dredging inner harbor and entrance basin. Preraratory work Balboa terminal. Floating caisson.  Miscellaneous items.	Expended to June 30, 1920.  \$137, 190, 492. 93 74, 515, 978. 56 17, 771, 615. 81 9, 062, 077. 94 \$63, 619. 33  6, 140, 391. 04 5, 964, 365. 94 704, 239. 69 3, 613, 638. 638. 34 4, 704, 239. 63 3, 514, 854. 70 1, 247. 41 34, 847. 85 4, 615, 798. 61 7, 793, 980. 34 923, 338. 07 162, 619. 80 3, 550, 141. 96 1, 808, 921. 65 347, 868. 15	\$147,400.00 \$11,000.00 11,000.00 72,600.00 106,700.00	\$137, 337, 892, 93 74, 515, 978, 56 17, 771, 615, 81 9, 062, 077, 91 879, 619, 33  6, 140, 391, 04 5, 964, 365, 94 704, 239, 69 3, 613, 030, 42 3, 114, 854, 70 54, 474, 41 34, 847, 85 4, 615, 798, 67 793, 980, 34 923, 338, 07 235, 219, 80 3, 656, 841, 96 1, 808, 921, 65 347, 868, 15
Construction of Canal.  Prism excavation. Locks. Dams and spillways. Breakwaters. Aids to navigation.  Auxiliary works.  Electric power and transmission system. Coaling stations. Fuel-oil plants. Dry docks. Wharves, piers, and docks (exclusive of Dock 6). Playgrounds. Landscare improvements Water and sewer systems and roads. Sanitary fils and ditches. Townsites. Improvements Cristobal Harbor. Dredging inner harbor and entrance basin. Preraratory work Balboa terminal. Floating caisson.  Miscellaneous items.	Expended to June 30, 1920.  \$137, 190, 492. 93 74, 515, 978. 56 17, 771, 615. 81 9, 062, 077. 94 \$63, 619. 33  6, 140, 391. 04 5, 964, 365. 94 704, 239. 69 3, 613, 638. 638. 34 4, 704, 239. 63 3, 514, 854. 70 1, 247. 41 34, 847. 85 4, 615, 798. 61 7, 793, 980. 34 923, 338. 07 162, 619. 80 3, 550, 141. 96 1, 808, 921. 65 347, 868. 15	\$147,400.00 \$11,000.00 11,000.00 72,600.00 106,700.00	\$137, 337, 892, 93 74, 515, 978, 56 17, 771, 615, 81 9, 062, 077, 91 879, 619, 33  6, 140, 391, 04 5, 964, 365, 94 704, 239, 69 3, 613, 030, 42 3, 114, 854, 70 54, 474, 41 34, 847, 85 4, 615, 798, 67 793, 980, 34 923, 338, 07 235, 219, 80 3, 656, 841, 96 1, 808, 921, 65 347, 868, 15
Construction of Canal.  Prism excavation. Locks. Dams and spillways. Breakwaters. Aids to navigation.  Auxiliary works.  Electric power and transmission system. Coaling staticns. Free-oil plants. Dry docks. Wharves, piers, and docks (exclusive of Dock 6). Playgrounds. Landscare improvements Water and sewer systems and reads. Sanitary (11s and ditches. Townsites. Townsites. Improvements Cristobal Harber. Dredging inner harbor and entrance basin. Preraratry work Balbea terminal. Floating caisson.	Expended to June 30, 1920.  \$137, 190, 492.93 74, 515, 978.56 17, 771, 615. 81 9, 062, 077. 94 868, 619. 33  6, 140, 391. 04 5, 964, 365. 94 7, 704, 239. 69 3, 613, 030. 42 3, 314, 854. 70 54, 474. 41 34, 847. 85 4, 615, 798. 67 793, 980. 34 923, 38. 07 162, 619. 80 3, 550, 141. 96 1, 808, 921. 65 347, 868. 15  3, 729, 059. 30 38, 721, 690. 16 155, 818. 24 10, 000, 000. 01 9, 800, 626. 46 16, 132, 633. 73	\$147,400.00 11,000.00 11,000.00 72,600.00 106,700.00 81,473.40	\$137, 337, 892, 93 74, 515, 978, 56 17, 771, 615, 81 9, 062, 077, 94 879, 619, 33  6, 140, 391, 04 5, 964, 363, 94 704, 239, 69 3, 613, 930, 42 3, 314, 854, 70 54, 474, 41 34, N17, 85 4, 615, 798, 67 793, 980, 34 923, 338, 07 235, 219, 80 3, 656, 841, 96 1, 808, 921, 65 347, 868, 15

## Table No. 1-Status of authorized bond issue-Continued.

### CLASSIFIED STATEMENT-Continued.

	Expended to June 30, 1920.	Unexpended allotments.	Totals.
Miscellaneous items—Continued.  Public works in the cities of Panama and Colon	\$2,479,522.00 2,087,342 67		\$2,479,522.00 2,087,342.67
Less Panama Railroad property transferred to Canal construction. 765,317.32  Reequipment loan to Panama Railroad. First mortgage bond loan to Panama Railroad. Launch Louise. Equipment, material, and supplies. Miscellaneous receipts credited to assets.	1,848,217.50		1, 402, 880. 86 1, 399, 114. 61 1, 848, 217. 50 13, 500. 00 7, 943, 633. 49 5, 215, 140. 30
Total.	372, 366, 836. 58	\$427,973.40	372,794,809.98

## Table No. 2.—General ledger items, June 30, 1929.

DEBITS.		CREDITS.	
Cash in hands of fiscal officers Appropriation balances, subject to requisition Accounts receivable.	\$4,336,652.83 13,744,224.28 3,267,378.64	Accounts payable	\$3,729,454.58 233,947.59
Material and supplies (Table No. 12) Reequipment loans to Panama	5,871,704.48	No. 9).  Panama Railroad property operated	522, 177. 52
Railroad Company First mortgage bond loan to Pana-	1, 399, 114. 61	by Parama Canal (Table No. 16). Unclassified credits.	842, 468. 60 302, 441. 75
ma Railroad Company Public works in Panama and Colon	1,848,217.50 2,650,590 94	Reserves (Table No. 17)	3,739,889.61
Construction of Canal (Table No. 8) : Capital additions (Table No. 8)		Government (Table No. 13) Assets received from United States	544, 792. 37
Equipment (Table No. 10)	9, 805, 232. 82 937, 962. 45	Army	183,724.99
Panama Canal property operated by Panama Railroad Company	331,302.40	works in Panama and Colon, re- paid to appropriations	396,956.06
(Table No. 15)	2, 168, 198. 18	Appropriations by Congress (Table No. 3).	
Government	364, 212. 50	10.0/	101, 101, 2011 12
Army Fortifications.	175, 258. 99 31,008, 728 94		
Presentation of launch Louise to French Government	13,500.00		
Property transferred to other de- partments United States Gov-	10,000.00		
ernment (Table No. 14)  Miscellaneous receipts credited to	2,087,342.67		
assets	5, 215, 140.30		
Panama. Operation and maintenance of Canal	2,000,000.00		
(Table No. 4)	36,657,766.89 209,462 02		
Total		Total	477, 927, 110. 48

## Table No. 3.—Statement of appropriations by Congress

TABLE NO. 3.—Statement of appropriations by Congress.	
Canal rights from French company (act of June 28, 1902)	\$40,000,000.00 10,000,000.00
Canal connecting Atlantic and Pacific Oceans:       \$10,000,000.00         Act of June 28, 1992.       \$10,000,000.00         Act of Dec. 21, 1905.       11,000,000.00	
Deficiency for fiscal year 1906 (act of Feb. 27, 1906): Miscellaneous material purchases in United States. 1,000,000,00 Miscellaneous material rurchases on 1sthmus. 400,000.00	22, ,
Payments to Panama Railroad Company.         200,060.00           1sthmus pay rolls.         2,100,000.00           Salaries and services in the United States.         75,000.00           New equipment purchases.         1,565,786.00	
Recquipment of Panama Railroad. 650,000.00	5,990,786.00

## Table No. 3.—Statement of appropriations by Congress—Continued.

Classified appropriations, 1907-1920: Expenses in the United States—	
Salaries       \$1,476,056.33         Incidental expenses       583,179.36	
Construction and engineering—         29,443,212.00           Pay of officers and employees.         29,443,212.00           Pay of skilled and unskilled labor         101,809,961.00           Miscellaneous material purchases, etc.         109,881,514.24           Incidental expenses on Istbmus         6,640,250.00	\$2,059,235.69
Civil administration—         4,507,000.00           Pay of officers and employees.         4,507,000.00           Pay of skilled and unskilled laborers.         191,000.00           Material and expenses.         1,178,200.00	
Sanitary department	
Reequipment of Panama Railroad. Relocation of Panama Railroad. Redemotion of first-mortrage bonds of Panama Railroad Company. Sanitation in cities of Panama and Colon. Survey of lands, Canal Zone. Relief of Pembroke B. Benton for injuries. Construction and equipment	7,815,000.00
Construction and equipment Private acts for relief— Flizabeth G. Martin, June 17, 1919. 1,200.00 Marcellus Troxell, Jan. 13, 1911. 1,500.00 W. L. Miles, Feb. 13, 1911. 1,704.18 Chas, A. Caswell, Mar. 2, 1911. 1,055.00 Heirs of Robert S. Gill, July 3, 1912. 2,520.00 Dourlas B. Thompson, July 3, 1912. 1,500.00 Allesandra Comba, July 10, 1912. 500.00 Peter Wieginton, Feb. 7, 1913. 500.00 Raymond R. Ridenous, Feb. 7, 1913. 500.00 Heirs of Charles B. Stump, Feb. 7, 1913. 1,500.00 Heirs of Charles B. Stump, Feb. 7, 1913. 1,980.00 Oscar F. Lackey, Feb. 18, 1913. 1,980.00 Oscar F. Lackey, Feb. 18, 1913. 1,980.00 John H. Cole, Feb. 18, 1913. 2,000.00 John H. Cole, Feb. 18, 1913. 1,951.38 Robert Cozgen, Feb. 18, 1913. 1,951.38 Robert Cozgen, Feb. 18, 1913. 1,951.38 F. W. Theodore Schroeter, Mar. 3, 1915. 1,397.66 L. V. Thomas, Mar. 3, 1915. 1,397.66 L. V. Thomas, Mar. 3, 1916. 3,000.00 Underway of the Court of Claims, War.	24,328,088.00
Pedro Sanchez, Feb. 18, 1913       2,000,00         John H. Cole, Feb. 18, 1913       1,951,38         Robert Cozgen, Feb. 18, 1913       1,500,00         Wife of William Goodlay, July 17, 1914       1,000,00         John Burrows, Feb. 27, 1915       1,433,23         F. W. Theodore Schroeter, Mar. 3, 1915       1,397,66         L. V. Thomas, Mar. 3, 1915       1,680,00         Joseph A. Buckholt, Aug. 4, 1916       3,000,00         Olaf Nelson, Aug. 8, 1916       1,200,00	31, 122. 55
Judgments of the Court of Claims, War—       196.45         Act of Aug. 26, 1912       196.45         Act of Mar. 4. 1913       900.00         Act of July 29, 1914       905.38         Act of Feb. 28. 1916       1,000.00         Act of Sept. 8, 1916       2,537.20	
Judgment, United States Court (act of Apr. 6, 1914).  Presenting steam launch Louise to French Government (act of Aug. 25, 1914).  Total for Canal construction, rights, etc., to June 30, 1920.	5,539.03 9,489.76 6,000.00
Fortifications:         \$250,000.00           Aeronautic stations.         500,000.00           Aviation seaccast defenses.         500,000.00           Armament of fortifications.         14,256,786.17           Army quarters, storchouses, etc.         8,223,609.70           Building and materials.         57,375.00           Cantonment construction         500,000.00           Casseway.         150,000.00           Construction of sea walls and embankments.         63,600.00           Electric li-th and power plants.         301,631.00           Fire crittcl         976,190.15           Land for military purposes.         50,000.00           Land defenses.         45,100.00           Maintenance of clearings and trails         176,900.00           Maintenance effect crittcl installations         45,000.00           Maintenance of searchlights and electric power equipment         57,500.00           Ordnance depot         652,409.00           Preservation and repair of fortifications         450,000.00           Preservation and repair for fortifications         450,000.00           Re-erve eouipment for Intrifications         57,500.00           Sanitary clearing, filling, etc.         210,000.00	
Seaccast batteries         6,447,500.00           Searchlights for seaccast fertifications         601,840.00           Sites for seaccast fortifications         155,000.00	

## Table No. 3.—Statement of appropriations by Congress—Continued.

Fortifications—Continued. Submarine mines. Submarine mine structures. Submarine base. Submarine base.	\$668,316.00 322,277.00 1,652,625.00 62,000.00	\$37,425,683.02
Less amounts transferred to United States Treasury surplus fund:         \$2,214,000.00           Armament of fortifications         \$2,214,000.00           Fea walls and embankments         3,000.00           Submarine mines         215,382.21           Submarine mines—structures         15,209.00		\$01, <del>12</del> 0, 000. 02
Ordnance depot	\$250, 000. 00 250, 000. 09 250, 000. 00 250, 000. 00 250, 000. 00 250, 000. 00 250, 000. 00 250, 000. 00	
Regulating commerce, act of May 20, 1918 Censorship of foreign mails, act of May 20, 1918  Maintenance and operation of Canal:     Maintenance and operation, Panama Canal.     Sanitation, Canal Zone, Panama Canal.     Civil government, Panama Canal and Canal Zone. Increases of compensation, Panama Canal.	36, 497, 939, 00 4, 000, 000, 00 3, 442, 000, 00	170,000.00
Total appropriation by Congress to June 30, 1920		43,997,755.68

# DETAIL OF ACTS FOR MAINTENANCE AND OPERATION, SANITATION, CIVIL GOVERNMENT, AND CONSTRUCTION AND EQUIPMENT.

		_		_	
	Maintenance and operation.	Sanitation Canal Zone.	Civil govern- ment Panama Canal, Canal Zone.	Total.	Construction and equipment.
Act of Mar. 3, 1915. Act of July 1, 1916. Act of June 12, 1917. Act of Mar. 28, 1918.	\$5, 200, 000. 00 5, 750, 000. 00 9, 000, 000. 00	\$700, 000. 00 700, 000. 00 700, 000. 00	\$540,000.00 600,000.00 700,000.00	\$6, 440, 000. 00 7, 050, 000. 00 10, 400, 000. 00	\$10,500,000 00 9,750,000.00 2,755,000.00 593,190.00
Act of June 4, 1918. Act of July 1, 1918. Act of July 19, 1919. Act of Nov. 4, 1919.	9,000,000.00 7,547,939.00	150, 000, 00 900, 000, 00 850, 000, 00	750, 000. 00 702, 000. 00 150, 000. 00	150,000.00 10,650,000.00 9,079,933.00 150,000.00	729, 898. 00
Increase of compensation Panama Canal, 1918, act of July 12, 1917.  Increase of compensation Panamark	10,006.22			10, 006, 22	
ama Canal, 1919, act of July 3, 1918.  Increase of compensation Panage Canal, 1999, Act of Mar. I	16,000.00			16,000.00	
ama Canal, 1929, Act of Mar. 1, 1919	26, 810. 46			26, 810. 46	
1919	5,000.00			5,000.00	
Total	36, 555, 755. 68	4,000,000.00	3, 442, 000. 00	43, 997, 755. 68	24, 328, 088. 00
M vintenance and operation prior to July 1, 1915 Stock of material for main- tenance and operation				4, 289, 159, 00	
Total for maintenance and operation				50,511,914.68	
Act of June 5, 1920	7,531,851.00	850,000.00	909, 000. 00	9, 281, 851. 00	

Table No. 4.—Panama Canal operation and maintenance to June 30, 1920.

		1	
	Fiscal year 1919.	Fiscal year 1920.	Total to date.
Fauino division:			
farine division: Admeasurement of vessels	\$21,650.91 4,104.76 98,857.28	\$31,385.91 7,292.82 122,794.31 188,535.36 58,555.45 47,999.86 7,788.60	\$101,536.0 28,607.8 510,051.3
Admeasurement of vessels	4, 104, 76	7,292.82	28,607.8
Loral inspection Aids to navigation.	98, 857, 28	122, 794, 31	510,051.3
Alos to havigation	128, 416, 96 74, 343, 04	188, 535, 36	619, 525, 4
I Hotage	74 343 04	58 555 45	296, 963, 1
Operation of harbor tugs—balance	53, 800. 48	47 999 86	164 896 7
Operation of port captain's onice—balance	05,000.10	7 788 60	619, 525, 4 296, 963, 1 164, 896, 7 13, 906, 6
Aids to navigation. Filotage Operation of harbor tugs—balance. Operation of port captain's office—balance. Assisting vessels through cut		1,100.00	10,000.0
Total marine division	381, 173. 43	464, 352, 31	1,735,487.1
Locks, operation and maintenance:			
Gatun locks			404 800 -
	28,748,49 155,566,39 142,643,16	29,154.46 200,021.35	131,763.1
Operation	155, 566, 39	200,021.35	780, 099. 4
Maintenance	142,643.16	143,849.71	878, 710. 3
Total Gatun locks	326, 958. 04	373,025.52	1.790,573.0
Gatun spillway	6,226.22	6,535.37	76,131.8
Pedro Miguel looks:	00.100.15	10 000 5	110 150
Superintendence Operation Maintenance	22,429,48 156,080.69	19,620.70 174,494.38 84,434.88	112, 156, 8 617, 347, 6 533, 850, 8
Operation	156, 080, 69	174,494.38	617,347.6
Maintenance	53,027.12	84, 434. 88	533,850.8
Total Pedro Miguel locks	231,537.29	278, 549. 96	1,263,355.3
Pedro Miguel dams			168.9
Mirafores locks:			115 655
Superintendence	17,613.67	19,731.61	115, 755.
Operation	170,423.13	190,935,95	782,603.
Superintendence	17,613.67 170,423.13 123,593.92	19, 731, 61 190, 935, 95 113, 354, 13	662, 450.
Total Miraflores locks		324, 021. 69	1,560,809.
Miraflores spillway and east dam:		1,323.49	18, 719.
			832.
Miraflores west dam—maintenance		000 470 00	
Total lock operation and maintenance	877, 105. 95	983, 456. 03	4,710,590.
Oredging:			400 000
Atlantic entrance	6,868.56 12,530.77 684,563.67	9,017.14	198,369.
Cotun Loke	12,530.77	6, 293, 82	19.267.
Gatun Dake	684 563 67		
		1.116, 835, 70	11,016,556,
Gaillard Cut	001,000101	9,017.14 6,293.82 1,116,835.70	11,016,556. 85,301.
Gaillard Cut Miraflores Lake.		40.90	11,016,556. 85,301.
Gaillard Cut. Miraflores Lake. Facific entrance.		40.90	11,016,556. 85,301. 1,166,625.
Gaillard Cut. Miraflores Lake. Facific entrance Pacific Inner Harbor.		1,116,835.70 23.95 290,835.16 188,354.01	11,016,556. 85,301. 1,166,625. 188,354.
Gaillard Cut. Miraflores Lake. Facific entrance. Facific Inner Harbor.  Total dredging.		40.90	12, 674, 475.
Facific entrance Facific Inner Harbor Total dredging	1,152,188.99	290, 835, 16 188, 354, 01 1, 611, 359, 78	12, 674, 475.
Facific entrance Facific Inner Harbor Total dredging	1,152,188.99	290,835.16 188,354.01 1,611,359.78 21,631.28	12, 674, 475.
Facific entrance Facific Inner Harbor  Total dredging  atun dam, maintenance	1,152,188.99 17,707.93 22,578.72	290, 835, 16 188, 354, 01 1, 611, 359, 78	12, 674, 475.
Pacific entrance Pacific Inner Harbor  Total dredging.  Statun dam, maintenance.	1,152,188.99 17,707.93 22,578.72	290,835.16 188,354.01 1,611,359.78 21,631.28	12, 674, 475.
Facific entrance Facific Inner Harbor  Total dredging  Total dredging  Total of facting obstructions	1,152,188.99 17,707.93 22,578.72	290,835.16 188,354.01 1,611,359.78 21,631.28	12, 674, 475.
Facific entrance Facific Inner Harbor  Total dredging	1,152,188.99 17,707.93 22,578.72	290, 835, 16 188, 354, 01 1,611,359, 78 21,631, 28 33,063, 09	12, 674, 475.
Facific entrance Facific Inner Harbor  Total dredging  Satun dam, maintenance  Satun-A indi levee, maintenance	1,152,188.99 17,707.93 22,578.72	290, 835, 16 188, 354, 01 1,611,359, 78 21,631, 28 33,063, 09	12, 674, 475.
Facific entrance Facific Inner Harbor  Total dredging  atun dam, maintenance.  temoval of floating obstructions.  atun-k-indi levee, maintenance.  loion west breakwater, maintenance.  loos atun-k-indi levee, maintenance.	1,152,188.99 17,707.93 22,578.72	290, 835, 16 188, 354, 01 1,611,359, 78 21,631, 28 33,063, 09	12, 674, 475.
Facific entrance Facific Inner Harbor  Total dredging  atun dam, maintenance.  temoval of floating obstructions.  atun-k-indi levee, maintenance.  loion west breakwater, maintenance.  loos atun-k-indi levee, maintenance.	1,152,188.99 17,707.93 22,578.72	290, 835, 16 188, 354, 01 1,611,359, 78 21,631, 28 33,063, 09	12, 674, 475.
Facific entrance Facific Inner Harbor  Total dredging	1,152,188.99 17,707.93 22,578.72 5,789.70 10,949.49 77,591.81	290, 835, 16 188, 354, 01 1,611,359, 78 21,631, 28 33,063, 09	12, 674, 475.
Facific entrance Facific Inner Harbor  Total dredging	1,152,188.99 17,707.93 22,578.72 5,789.70 10,949.49 77,591.81	290,835.16 188,354.01 1,611,359.78 21,631.28	12, 674, 475.
Facific entrance Facific Inner Harbor  Total dredging	1,152,188.99 17,707.93 22,578.72 5,789.70 10,949.49 77,591.81	290, 835, 16 188, 354, 01 1,611,359, 78 21,631, 28 33,063, 09	12, 674, 475.
Facific entrance Facific Inner Harbor  Total dredging	1,152,188.99 17,707.93 22,578.72 5,789.70 10,949.49 77,591.81	290, 835, 16 188, 354, 01 1,611, 359, 78 21, 631, 28 33, 063, 09 7, 243, 51 7, 541, 10 46, 874, 32 46, 127, 42	12, 674, 475.
Facific Inter Harbor  Total dredging	1,152,188.99 17,707.93 22,578.72 5,789.70 10,949.49 77,591.81 55,022.49	290, 835, 16 188, 354, 01 1,611, 359, 78 21, 631, 28 33, 063, 09 7, 243, 51 7, 541, 10 46, 874, 32 46, 127, 42	12, 674, 475.
Facific Inter Harbor  Total dredging.  Total dredging.  Section of floating obstructions.  Seatun-Mindi levee, maintenance.  Seatun-Mindi levee, maintenance.  Seatun-Mindi levee, maintenance.  Seatun-Mindi levee, maintenance.  Seatun-Mindi breakwater, maintenance.  Seamage to vessels in locks.  Seamage to vessels in Canal.  Septention of floating derricks.  Seatuneance of transportation trucks.  Seature of Seature.  Seature of Seature.	1,152,188.99 17,707.93 22,578.72 5,789.70 10,949.49 77,591.81	290, 835, 16 188, 354, 01 1,611,359, 78 21,631, 28 33,063, 09	12, 674, 475.  132, 435, 166, 290. 31, 326, 81, 523, 14, 193. 19, 912. 46, 249, 577, 247. 266, 104. 37, 606, 19, 158. 126, 095. 22, 902.
Facific entrance Facific Inner Harbor  Total dredging	1,152,188.99 17,707.93 22,578.72 5,789.70 10,949.49 77,591.81 55,022.49	290, 835, 16 188, 354, 01 1,611, 359, 78 21, 631, 28 33, 063, 09 7, 243, 51 7, 541, 10 46, 874, 32 46, 127, 42	12, 674, 475.  132, 435, 166, 290. 31, 326, 81, 523, 14, 193. 19, 912. 46, 249, 577, 247. 266, 104. 37, 606, 19, 158, 126, 095, 22, 902.
Facific Inter Harbor  Total dredging	1,152,188.99 17,707.93 22,578.72 5,789.70 10,949.49 77,591.81 55,022.49 108,108.69 21,810.27	290, 835, 16 188, 354, 01 1,611, 359, 78 21, 631, 28 33, 063, 09 7, 243, 51 7, 541, 10 46, 874, 32 46, 127, 42 1, 363, 95 1, 092, 54	12, 674, 475.  132, 435, 166, 290. 31, 326, 81, 523, 14, 193, 19, 192, 46, 249, 577, 247, 266, 104, 37, 606, 19, 158, 126, 095, 22, 902, 61, 823.
Facific Inter Harbor  Total dredging  atun dam, maintenance. temoval of floating obstructions. tatun-k indi levee, maintenance. toion west breakwater, maintenance. tatun-k indi levee, maintenance.	1,152,188.99 17,707.93 22,578.72 5,789.70 10,949.49 77,591.81 55,022.49 108,108.69 21,810.27	290, 835, 16 188, 354, 01 1,611, 359, 78 21, 631, 28 33, 063, 09 7, 243, 51 7, 541, 10 46, 874, 32 46, 127, 42 1, 363, 95 1, 092, 54	198, 369. 19, 267. 11, 1016, 556. 85, 301. 1, 166, 625. 188, 354. 12, 674, 475. 132, 435. 166, 290. 31, 326. 81, 523. 14, 193. 19, 912. 46, 249. 577, 247. 266, 104. 37, 606. 19, 138. 126, 095. 22, 902. 61, 823. 15, 934, 343.
Facific Inner Harbor  Total dredging  atun dam, maintenance temoval of floating obstructions atun-Mindi levee, maintenance toion west breakwater, maintenance amage to vessels in locks lamage to vessels in Canal peration of floating derricks aintenance of transportation trucks ry exavation, Rio Grande hop expense, Balboa, balance apital losses apital replacements oss on business operations.  Total operation and maintenance Proportion of overhead expenses	1,152,188.99 17,707.93 22,578.72 5,789.70 10,949.49 77,591.81 55,022.49 108,108.69 21,810.27	290, 835, 36 188, 354, 01 1,611, 359, 78 21, 631, 28 33, 063, 09 7, 243, 51 7, 541, 10 46, 874, 32 46, 127, 42 1, 363, 95 1, 092, 54 3, 224, 105, 33 3, 324, 167, 10	12, 674, 475.  132, 435, 166, 290, 31, 326, 81, 523, 14, 193, 19, 912, 46, 249, 577, 247, 266, 104, 37, 606, 19, 158, 126, 995, 22, 902, 61, 823, 20, 723, 423, 15, 934, 343,
Facific Inner Harbor  Total dredging  atun dam, maintenance. temoval of floating obstructions. atun-k indi levee, maintenance. toion west breakwater, maintenance. toion west breakwater, maintenance. to sans Island breakwater, maintenance. to sans Island breakwater, maintenance. to samage to vessels in locks. to samage to vessels in Canal. to peration of floating derricks. to intenance of transportation trucks. to survey avation, Rio Grande. thop expense, Balboa, balance. apital losses. apital replacements. toss on business operations.	1,152,188.99 17,707.93 22,578.72 5,789.70 10,949.49 77,591.81 55,022.49 108,108.69 21,810.27	290, 835, 16 188, 354, 01 1,611, 359, 78 21, 631, 28 33, 063, 09 7, 243, 51 7, 541, 10 46, 874, 32 46, 127, 42 1, 363, 95 1, 092, 54	12, 674, 475.  132, 435, 166, 290, 31, 326, 81, 523, 14, 193, 19, 912, 46, 249, 577, 247, 266, 104, 37, 606, 19, 158, 126, 995, 22, 902, 61, 823, 20, 723, 423, 15, 934, 343,
Facific Inner Harbor  Total dredging.  Gatun dam, maintenance. Removal of floating obstructions. Satun-Mindi levee, maintenance. Soon west breakwater, maintenance. Soos Island breakwater, maintenance. Soos Island breakwater, maintenance. Damage to Vessels in locks. Damage to Vessels in Canal. Deration of floating derricks. Anintenance of transportation trucks. Dry excavation, Rio Grande. Lope expense, Balboa, balance. apital losses. apital replacements. Loss on business operations.  Total operation and maintenance. Proportion of overhead expenses.  Total.  Revenues:	1,152,188.99 17,707.93 22,578.72 5,789.70 10,949.49 77,591.81 55,022.49 108,108.69 21,810.27 2,730,027.47 3,382,167.30 6,112,194.77	290, 835, 16 188, 354, 01 1,611, 359, 78 21, 631, 28 33, 063, 09 7, 243, 51 7, 541, 10 46, 874, 32 46, 127, 42 1, 363, 95 1, 092, 54 3, 224, 105, 33 3, 324, 167, 10 6, 548, 272, 43	12, 674, 475.  132, 435, 166, 290, 31, 326, 81, 523, 14, 193, 19, 912, 46, 249, 577, 247, 266, 104, 37, 606, 19, 158, 126, 035, 22, 902, 61, 823, 15, 934, 343, 36, 657, 766
Facific Inner Harbor  Total dredging  Gatun dam, maintenance temoval of floating obstructions. satun-kindi levee, maintenance oion west breakwater, maintenance amage to vessels in locks Damage to vessels in Canal operation of floating derricks aintenance of transportation trucks Dry exavation, Rio Grande hop expense, Balboa, balance apital losses apital replacements Loss on business operations  Total operation and maintenance Proportion of overhead expenses  Total  Revenues.	1,152,188.99 17,707.93 22,578.72 5,789.70 10,949.49 77,591.81 55,022.49 108,108.69 21,810.27 2,730,027.47 3,382,167.30 6,112,194.77	290, 835, 16 188, 354, 01 1,611, 359, 78 21, 631, 28 33, 063, 09 7, 243, 51 7, 541, 10 46, 874, 32 46, 127, 42 1, 363, 95 1, 092, 54 3, 224, 105, 33 3, 324, 167, 10 6, 548, 272, 43	12, 674, 475.  132, 435. 166, 290. 31, 326. 81, 523. 14, 193. 19, 912. 46, 249. 577, 247. 266, 104. 37, 606. 19, 158. 126, 905. 22, 902. 61, 823. 20, 723, 423. 15, 934, 343. 36, 657, 766.  33, 303, 581.
Facific Inner Harbor  Total dredging.  Gatun dam, maintenance. Removal of floating obstructions. Satun-A indi levee, maintenance. Soon sest breakwater, maintenance. Soon sland breakwater, maintenance. Soamage to vessels in locks. Damage to vessels in Canal. Decration of floating derricks. Saintenance of transportation trucks. Dry excavation, Rio Grande. Hop expense, Balboa, balance. apital losses. apital replacements. Loss on business operations.  Total operation and maintenance. Proportion of overhead expenses.  Total.  Revenues: Tolls. Interest, licenses, taxes, fees, fines, etc.	1,152,188.99 17,707.93 22,578.72 5,789.70 10,949.49 77,591.81 55,022.49 108,108.69 21,810.27 2,730,027.47 3,382,167.30 6,112,194.77	290, 835, 16 188, 354, 01 1,611, 359, 78 21, 631, 28 33, 063, 09 7, 243, 51 7, 541, 10 46, 874, 32 46, 127, 42 1, 363, 95 1, 092, 54 3, 224, 105, 33 3, 324, 167, 10 6,548, 272, 43 8, 493, 082, 56 203, 102, 88	12, 674, 475.  132, 435. 166, 290. 31, 326. 31, 326. 81, 523. 14, 193. 19, 912. 46, 249, 577, 247. 226, 104. 37, 606. 19, 158. 126, 995. 22, 902. 61, 823.  20, 723, 423. 15, 934, 343. 36, 657, 766.
Facific Inner Harbor  Total dredging  Gatun dam, maintenance temoval of floating obstructions. satun-kindi levee, maintenance oion west breakwater, maintenance amage to vessels in locks Damage to vessels in Canal operation of floating derricks aintenance of transportation trucks Dry exavation, Rio Grande hop expense, Balboa, balance apital losses apital replacements Loss on business operations  Total operation and maintenance Proportion of overhead expenses  Total  Revenues.	1,152,188.99 17,707.93 22,578.72 5,789.70 10,949.49 77,591.81 55,022.49 108,108.69 21,810.27	290, 835, 16 188, 354, 01 1,611, 359, 78 21, 631, 28 33, 063, 09 7, 243, 51 7, 541, 10 46, 874, 32 46, 127, 42 1, 363, 95 1, 092, 54 3, 224, 105, 33 3, 324, 167, 10 6, 548, 272, 43	12, 674, 475.  132, 435, 166, 290, 31, 326, 81, 523, 14, 193, 19, 912, 46, 249, 577, 247, 266, 104, 37, 606, 19, 158, 126, 935, 22, 902, 61, \$23, 20, 723, 423, 15, 934, 343, 36, 657, 766, 33, 303, 581.
Tactific entrance Pacific Inner Harbor  Total dredging.  Gatun dam, maintenance. Removal of floating obstructions. Satun-Mindi levee, maintenance. Soon stales breakwater, maintenance. Soon stalend breakwater, maintenance. Samage to vessels in locks. Damage to vessels in locks. Damage to vessels in Canal. Decration of floating derricks. Maintenance of transportation tracks. Dry excavation, Rio Grande. Hope expense, Balboa, balance. Apital losses.  Total operation and maintenance.  Proportion of overhead expenses.  Total.  Revenues: Tols. Interest, licenses, taxes, fees, fines, etc. I rofit on business operations.	1,152,188.99 17,707.93 22,578.72 5,789.70 10,949.49 77,591.81 55,022.49 108,108.69 21,810.27 2,730,027.47 3,382,167.30 6,112,194.77 6,156,118.95 136,870.77 61,027.26	290, 835, 16 188, 354, 01 1,611, 359, 78 21, 631, 28 33, 063, 09 7, 243, 51 7, 541, 10 46, 874, 32 46, 127, 42 1, 363, 95 1, 092, 54 3, 224, 105, 33 3, 324, 167, 10 6, 548, 272, 43 8, 493, 082, 56 203, 102, 88 239, 686, 13	12, 674, 475.  132, 435, 166, 290, 31, 326, 81, 523, 14, 193, 19, 912, 46, 249, 577, 247, 266, 104, 37, 606, 19, 158, 126, 095, 22, 902, 61, 823, 20, 723, 423, 15, 934, 343, 36, 657, 766, 894, 358, 190
Tactific entrance Pacific Inner Harbor  Total dredging.  Gatun dam, maintenance. Removal of floating obstructions. Satun-Mindi levee, maintenance. Soon mest breakwater, maintenance. Soon Sland breakwater, maintenance. Soamage to vessels in locks. Damage to vessels in Canal. Decration of floating derricks. Maintenance of transportation trucks. Dry excavation, Rio Grande. Lobop expense, Balboa, balance. apital losses. apital replacements. Loss on business operations.  Total operation and maintenance. Proportion of overhead expenses.  Total.  Revenues: Tolls. Interest, licenses, taxes, fees, fines, etc.	1,152,188.99 17,707.93 22,578.72 5,789.70 10,949.49 77,591.81 55,022.49 108,108.69 21,810.27 2,730,027.47 3,382,167.30 6,112,194.77	290, 835, 16 188, 354, 01 1,611, 359, 78 21, 631, 28 33, 063, 09 7, 243, 51 7, 541, 10 46, 874, 32 46, 127, 42 1, 363, 95 1, 092, 54 3, 224, 105, 33 3, 324, 167, 10 6,548, 272, 43 8, 493, 082, 56 203, 102, 88	12, 674, 475.  132, 435, 166, 290, 31, 326, 81, 523, 14, 193, 19, 912, 46, 249, 577, 247, 226, 104, 37, 606, 19, 158, 126, 695, 22, 902, 61, 823, 20, 723, 423, 15, 934, 343, 36, 657, 766, 33, 303, 581, 764, 894

Table No. 5.—Comparison of current expenses of operation and maintenance with current revenues, by years, 1914 to 1920.

Fiscal year.	Maintenance and opera- tion include proportion of overhead.	Revenues.	Revenues in excess of expenses.	Expenses in excess of revenues.	Excess of revenues over ex- penses to date.	Excess of expenses over revenues to date.
1914 1915 1916 1917 1918 1919	\$166,030.91 4,123,128.09 6,999,750.15 6,788,047.60 5,920,342.94 6.112,194.77 6,548,272.43	\$14,618.68 4,343,383.69 2,558,542.38 5,838,398.70 6,411,843.28 6,354,016.98 8,935,871.57	\$220, 255. 6) 491, 500. 34 241, 822. 21 2, 387, 599. 14		\$68,843.37	\$151, 412. 23 4, 519, 177. 92 5, 352, 013. 30 4, 860, 512, 96 4, 618, 690. 75 2, 231, 091. 61
Total	36,657,766.89	34, 426, 675. 28	3, 341, 177. 29	5, 572, 268. 90		2,231,091.61

Table No. 6.—Statement of overhead expenses, fiscal year 1920.

	Fiscal year 1919.	Fiscal year 1920.
Civil government:		
Civil affairs— Administration.	010 000 07	er 220 01
Posts Posts	\$13, 086, 07 165, 192, 64	\$5,339.91 171,516.54
Customs	57, 453. 21	36, 258. 16
Estates	82.03	2,731.25
Total civil affairs	235, 813. 95	215, 845 86
Schools	150,380.02	170, 481, 42
Fire protection	81, 147. 93	170, 481 42 91, 063. 58
Police and prisons	293, 498 08	335, 436 66
District courts.	17, 585. 52	22,910.51
Magistrate courts	12,551.49	14, 535.07
District attorney	6,877.77	7, 975. 22
Canal Zone marshal	8,069.16	8, 260.01
Municipal expenses	43.62	44. 21
Total civil government	805, 967. 54 98, 372. 23	866, 552. 54
Charged to other interests	98,372.23	57, 894.11
Amount apportioned	707, 595.31	808, 658. 43
Icalth department:		
Administration	27, 510.68	22 291.37
Medical storehouse	16,242.98	15. 349. 41
Ancon Hospital	477,694.53 82 128.85	578, 439. 70 99, 938, 44
Colon Hospital	14, 792.00	13, 566, 13
Palo Seco Leger Asylum.	33,091.52	35, 836. 89
Corozal Farm and Insane Asylum	117,046.58	125, 494. 16
Other hospitals and dispensaries	35, 491.14	44, 875. 37
Quarantine service	64, 850. 55	90, 388. 63
Sanitation—	am 000 0 m	70 700 00
Panama	67, 308.05	70,768 60
Colon	57, 734. 72	59,668.00
Canal Zone Street cleaning and disposal of garbage—	161, 505. 57	143, 980. 52
Panama	73,004.73	87, 328. 36
Colon	37, 182 98	50, 703. 59
Total health department	1, 251, 584, 88	1, 438, 629 17
Total health department	1, 251, 584. 88 605, 249 42	776, 279. 27

Table No. 6.—Statement of overhead expenses, fiscal year 1920—Continued.

Piscal year 1919.			
Mointenance and care of Administration Building   \$83, 189, 17   \$41, 013, 39   Operation of storchouses   \$16, 30, 31   52, 57   525, 70   Handling freight on docks   \$4, 608, 30   16, 464, 10   Operation of quarters   \$25, 609, 58   557, 783, 67   Material stock loses   \$7, 619, 39   53, 577, 58, 57   Material stock loses   \$17, 619, 39   53, 577, 58, 57   Material stock loses   \$17, 619, 39   53, 577, 58, 57   Material stock loses   \$18, 771, 11   19, 633, 35   Inventory adjustments   \$13, 668, 53   115, 518, 40   Inventory adjustments   \$13, 668, 53   117, 39, 800, 07   Total   \$1, 463, 630, 44   1, 459, 477, 01   Accounting department   \$1, 463, 630, 44   1, 459, 477, 01   Accounting office   \$378, 949, 76   494, 990, 11   Paymater's office   \$378, 949, 940, 940, 940, 940, 940, 940, 940			Fiscal year 1920.
Total	Supply department:     Maintenance and care of Administration Building     Operation of storehouses     Repairs to storehouses     Handling freight on docks     Operation of quarters     Maierial stock losses     Repairs to quarters     Inventory adjustments.     Repairs to or her buildings.     United States bills, adjustments.     Ancon nursery.	526, 592 10 10, 960, 94 4, 608, 30 825, 009, 58 57, 619 39 314 708, 62	713, 528.09 2, 755.79 16, 464.01 557, 835.67 53, 577.85 374, 194.09
Accounting office. Accounting office. S10, 290, 35 52, 430, 83 Collector's office 550, 290, 35 52, 430, 83 Collector's office 43, 945 32 43, 243, 22  Total 472, 276, 43 499, 764, 16 Charged to other interests 167, 266, 73 175, 127, 53  Amount apportioned 305, 609, 70 324, 636, 63  Washington office: Assistant auditor's office 12, 164, 76 11, 238, 65 General burean 67, 608, 89 70, 38, 71 Purchasing expenses 121, 107, 31 222, 522, 63  Total 334, 632, 74 347, 009, 02 Purchasing expenses 213, 107, 31 222, 522, 63  Amount apportioned 327, 708, 14 345, 572, 98  Miscellmeous: Trusp retails of employees on Isthmus 141, 300, 00 141, 603, 68 Recruiting and repatriating 48, 837, 31 51, 554, 96 Compensation to injured employees 11, 710, 88 1, 73, 95 Land office. 10, 175, 68 13, 377, 22 Special utorney 8, 584, 21 11, (33), 15 Payments to deported alien cripples 3, 350, 00 1, 200, 00  Total 213, 978, 08 219, 839, 96 Charged to other interests 19, 684, 21 20, 630, 15 Amount apportioned 1914, 803, 87 199, 808, 81  Administration: Executic office— Executic office— Executic office— Executic office—  Executic of		1,665,933.03 202,902.59	1,739,800.07 280,323.06
Accounting office.   378, 047, 76   444, 900. 11   Paymaster's office   50, 290. 35   52, 490. 83   Collector's office   43, 945   32   43, 945   32   43, 243. 22    Total   472, 276, 43   499, 764. 16   Charged to other interests   167, 266, 73   175, 127. 53    Amount apportioned   305, 009, 70   324, 636. 63   Washington office:   42, 261. 78   41, 819. 03   Prisbursing clerk's office   12, 164. 76   11, 928. 65   General bureau   67, 098. 29   70, 38. 71   Purchasing expenses   213, 107. 81   222, 892. 63    Total   334, 632, 74   347, 009. 02   Charged to other interests   6, 834. 60   1, 435. 04   Amount apportioned   327, 798. 14   345, 572. 98    Miscell-neous:   111, 300. 00   The property of the property and requisition bureau   29, 022, 81, 31, 31, 31, 31, 31, 31, 31, 31, 31, 3	Amount apportioned.	1, 463, 030. 44	1,459,477.01
Amount apportioned       305,009.70       324,636.63         Washington office:       42,201.78       41,819.03         Pisbursing elerk's office       12,164.76       11,928.65         Generel burean       67,098.89       70,38.71         Purchasing expenses       213,107.31       222,892.63         Total       334,632.74       347,099.02         Charged to other interests       6,834.60       1,435.04         Amount apportioned       327,798.14       345,572.98         Miscellaneous:       141,300.00       141,603.68         Recruiting and repatriating       48,857.31       51,554.96         Compensation to injured employees       1,710.88       1,033.95         Land office       10,115.68       13,377.22         Special utorney       8,584.21       11,733.15         Payments to deported alien cripples       3,350.00       1,200.00         Total       213,978.08       219,839.96         Charged to other interests       19,084.21       20,030.15         Amount apportioned       194,893.87       199,809.81         Administration:       Executive office—Executive office—Executive office—Executive office       47,404.74       44,161.93         Miscellaneous bureaus—Correspondence       45	Accounting office. Paymaster's office Collector's office	50, 290. 35 43, 945 32	52, 430, 83 43, 243, 22
Washington office:       42, 261.78       41, 819.03         Assistant auditor's office       12, 164.76       11, 928.65         Generel burean       67, 098.89       70, 38.71         Purchasing expenses       213, 107.31       222, 892.63         Total       334, 632.74       347, 099.02         Charged to other interests       6, 834.60       1, 436.04         Amount apportioned       327, 798.14       345, 572.98         Miscellaneous:       141, 300.00       141, 603.68         Recruiting and repatriating       48, 857.31       51, 554.96         Compensation to injured employees       1, 710.88       1, 733.95         Land office       10, 175.68       13, 377.22         Special utorney       8, 584.21       11, 230.15         Payments to deported alien cripples       3, 350.00       1, 200.00         Total       213, 978.08       219, 839.96         Charged to other interests       19, 084.21       20, 030.15         Amount apportioned       194, 803.87       199, 809.81         Administration:       Executive office—       Executive office—         Executive office—       45, 941.71       39, 615.19         Miscellaneous bureaus—       20, 202.85       31, 590.78	Total	472, 276, 43 167, 266, 73	499, 764. 16 175, 127. 53
Assistant auditor's office   42, 201. 78   41, 819. 03   Pisbursing clerk's office   12, 164. 76   11, 1928. 65   General bureau   67, 098. 89   70, 3. 8. 71   Purchasing expenses   213, 107. 31   222, 592. 63    Total   334, 632. 74   347, 090. 02   Charged to other interests   6, 834. 60   1, 436. 04   Amount apportioned   327, 798. 14   345, 572. 98    Miscellaneous:   141, 300. 00   141, 603. 68   Trums protation of employees on Isthmus   141, 300. 00   141, 603. 68   Recruiting and repatriating   48, 857. 31   51, 554. 96   Compensation to injured employees   1, 710. 88   1, 073. 95   Land office   10, 175. 68   13, 377. 92   Speci¹l vtorney   8, 584. 21   11, (23). 15   Payments to deported alien cripples   3, 350. 00   1, 200. 00    Tot⁻l   213, 978. 08   219, 839. 96   Charged to other interests   19, 084. 21   20, 030. 15   Amount apportioned   194, 803. 87   199, 809. 81    Administration:   Executi e office   Executi e office   47, 404. 74   44, 161. 93   Miscellaneous bureaus   47, 404. 74   44, 161. 93   Miscellaneous bureau   27, 667. 22   293. 94   Property and requisition bureau   27, 667. 22   293. 94   Property and requisition bureau   22, 666. 22   27, 921. 94   Can⁻l record   10, 154. 46   12, 193. 10   General bureau   62, 038. 81   55, 253. 46   Bureau of pay rolls   89, 738. 34   97, 004. 44   Clubs and playgrounds   122, 956. 62   217, 921. 42   Corel irrans and radiograms   1, 352. 52   4, 512. 79   Bureau of spiping commissioner   33, 244. 95   Total executive office   527, 098. 30   669, 016. 88   Charged to other interests   111, 045. 92   155, 225. 71	Amount apportioned	305, 009. 70	324,636.63
Amount apportioned.       327,798.14       345,572.98         Miscellaneous:       Transportation of employees on Isthmus       141,300.00       141,603.68         Recruiting and repatriating       48,857.31       51,554.96         Compensation to injured employees       10,175.68       13,377.22         Land office.       10,175.68       13,377.22         Special uttorney.       8,584.21       11,733.15         Payments to deported alien cripples.       3,350.00       1,200.00         Total.       213,978.08       219,839.96         Charged to other interests.       19,084.21       20,030.15         Amount apportioned.       194,893.87       199,809.81         Administration:       Execution office.       47,404.74       44,161.93         Miscellaneous bureaus.       45,941.17       39,615.19         Record bureau       51,255.53       57,527.82         Personnel bureau       27,667.22       29,293.94         Property and requisition bureau       29,022.85       31,500.78         General bureau       62,093.81       55,253.46         Bure un of pay rolls.       89,788.34       97,009.44         Clubs and playgrounds.       122,966.62       217,921.42         Camirecord. <td>Assistant auditor's office Disbursing elerk's office</td> <td>12, 164, 76</td> <td>11. 928. 65</td>	Assistant auditor's office Disbursing elerk's office	12, 164, 76	11. 928. 65
Miscellaneous:   Transportation of employees on Isthmus	Total. Charged to other interests.	334, 632. 74 6, 834. 60	347, 009. 02 1, 436. 04
Miscellaneous:       141, 300.00       141, 603.68         Recruiting and repatriating       48, 857.31       51, 554.96         Compensation to injured employees       10, 175.68       13, 377.22         Special totorney       8, 584.21       11, 73.15         Payments to deported alien cripples       3, 350.00       1, 200.00         Total       213, 978.08       219, 839.96         Charged to other interests       19, 084.21       20, 030.15         Amount apportioned       194, 893.87       199, 809.81         Administration:         Executic endice—       47, 404.74       44, 161.93         Miscellaneous bureaus—       47, 404.74       44, 161.93         Correspondence       45, 941.71       39, 615.19         Record bureau       51, 255.53       57, 527.82         Personnel bureau       27, 667.22       29, 293.94         Property and requisition bureau       29, 022.85       31, 590.78         General bureau       62, 093.81       55, 253.46         Bureau of pay rolls       89, 738.34       97, 009.44         Clubs and playgrounds       122, 956.62       217, 921.42         Correlecord       10, 154.46       12, 199.31         Offici I motor cars<	Amount apportioned	327, 798.14	
Tot^1.       213,978,08       219,839,96         Charged to other interests       19,084,21       20,030,15         Amount apportioned       194,893.87       199,809.81         Administration:         Except i e office—       2         Exceptice.       47,404.74       44,161.93         Miscellaneous bureaus—       45,941.17       39,615.19         Record bureau       51,255.53       57,527.82         Personnel bureau       27,667.22       29,293.94         Property and requisition bureau       29,022.85       31,590.78         General bureau       62,093.81       55,253.46         Bureau of pay rolls       89,738.34       97,009.44         Clubs and playgrounds       122,956.62       217,921.42         Can' Fecord       10,154.46       12,199.31         Offici I motor cars       16,596.80       21,915.22         C blearams and radiograms       9,721.03       9,561.10         Miscellaneous       1,352.52       4,512.79         Bureau of suitsities       13,193.21       15,129.53         Bureau of suitsities       13,193.21       15,129.53         Bureau of suitsities       13,193.21       15,129.53         Bureau of shipping commiss	Transportation of employees on Isthmus	8,584.21	141, 603. 68 51, 554, 96
Administration:  Executir e office— Executire.  Executire.  Executire.  47, 404.74  44, 161.93  Miscellaneous bureaus—  Correspondence.  45, 941.17  Record bureau.  51, 255.53  57, 527, 82  Personnel bureun.  27, 667. 22  29, 293. 94  Property and requisition bureau  22, 022. 85  General bureau.  62, 083. 81  55, 253. 46  Bureau of pay rolls.  89, 738. 34  97, 009. 44  Clubs and playgrounds.  122, 956. 62  1217, 921. 42  Camar record.  10, 154. 46  12, 199. 31  Offici Imotor cars.  C blegrams and radiograms  9, 721. 03  9, 561. 10  Miscellaneous  1, 352. 52  4, 542. 79  Bureau of so, visities.  13, 193. 21  15, 129. 53  Bureau of shipping commissioner  527, 098. 30  669, 016. 88  Charged to other interests  111, 045. 92  155, 225. 71	Total	213, 978. 08 19, 084. 21	219,839,96 20,030,15
Executi e office— Executi e. 47, 404. 74 44, 161. 93 Miscellaneous bureaus— Correspondence. 45, 941. 17 39, 615. 19 Record bureau 51, 255. 53 57, 527, 82 Personnel bureau 27, 667. 22 29, 293. 94 Property and requisition bureau 29, 022. 85 31, 590. 78 General bureau 62, 093. 81 55, 253. 46 Bureau of pay rolls. 89, 738. 34 97, 009. 44 Clubs and playgrounds. 122, 966. 62 217, 921. 42 Can lrecord 10, 154. 46 12, 199. 31 Offici Innotor cars 16, 599. 80 21, 945. 22 C bletrams and radiograms 9, 721. 03 9, 561. 10 Miscellaneous 1, 352. 52 4, 542. 79 Bureau of softistics 13, 193. 21 15, 129. 53 Bureau of shipping commissioner 33, 264. 95  Total executive office. 527, 098. 30 669, 016. 88 Charged to other interests 111, 045. 92 155, 225. 71	Amount apportioned	194, 893. 87	199, 809.81
Total executive office       527, 098, 30       669, 016, 88         Charged to other interests       111, 045, 92       155, 225, 71	Executice office— Executice	47, 404. 74 45, 941. 17 51, 255. 53 27, 667. 22	44, 161, 93 39, 615, 19 57, 527, 82 29, 293, 94
Total executive office       527, 098, 30       669, 016, 88         Charged to other interests       111, 045, 92       155, 225, 71	Property and requisition bureau General bureau Bure su of pay rolls Clubs and playgrounds Can'l record Offici I motor cars Caberrams and radiograms Miscell uneous	29, 022. 85 62, 093. 81 89, 738. 34 122, 956. 62 10, 154. 46 16, 596. 80 9, 721. 03 1, 352. 52	97, 009. 44 217, 921. 42 12, 199. 31 21, 945. 22 9, 561. 10 4, 542. 79
Total executive office       527, 098, 30       669, 016, 88         Charged to other interests       111, 045, 92       155, 225, 71		13, 193. 21	15, 129, 53 33, 264, 95
Amount apportioned. 416, 052. 38 513, 791. 17	Total executive office.	527,098.30	669, 016, 88 155, 225, 71
	Amount apportioned.	416, 052. 38	513, 791. 17

Table No. 6.—Statement of overhead expenses, fiscal year 1920—Continued.

	Fiscal year 1919.	Fiscal year 1920.
Engineer of maintenance: Office engineer. Surveys. Meteorology and hydrography.	\$48, 346, 07 38, 828, 34 33, 920, 22	\$54, 180, 11 43, 993, 31 36, 793, 67
Total. Charged to other interests.	121, 094. f3 45, 932. 35	134, 967. 09 41, 861. 05
Amount apportioned	75, 162. 28	93, 106. 04
Electrical division: Lights, street, lodge halls, and churches	6, 797. 29	14,609.73
Amount apportioned	6, 797. 29	14,609.73
Municipal engineering: Operation and maintenance of waterworks. Repairs to sewer system. Repairs to roads.	418, 556, 79 22, 027, 25 439, 374, 24	449, 595, 60 24, 966, 88 135, 299, 56
Tot^1. Charged to other interests.	879, 958. 28 468, 842. 99	610, 862.04 294, 434.49
Amount apportioned	411, 115. 29	316, 427. 55
Grand tot∘l: Administration. Charged to other interests.	4, 221, 768, 78 1, 021, 909, 39	4, 235, 868. 95 968, 438. 03
Amount apportioned.	3, 199, 859. 39	3, 237, 430. 92
Total overhead expenses. Charged to other interests.	6, 279, 321. 20 1, 725, 531. 04	6, 541, 050, 66 1, 802, 611, 41
Total amount apportioned	4, 553, 790. 16	4, 738, 439. 25
Distribution:  Operation and maintenance of Canal. Construction of Canal. Fortific times. Business operations. Expenses of s les—construction, material, and equipment. Public works in cities of Panama and Colom. Repurs to steamships Ancon and Cristobal. Censorship of mails. Regulation of confinerce. Capital additions.	3,382,167.30 149,510.97 119,385.48 724,472.09 61,529.17 5,795.25 121.86 9,316.70 3,015.15 98,476.19	3, 324, 167. 10 54, 755. 89 328, 721. 46 887, 319. 51 17, 498. 39 9, 756. 49 16, 122. 72 1 3, 226. 31 1 430. 32 103, 754. 32
Total	4, 553, 790. 16	4, 738, 439. 25

<sup>1</sup> Credit.

Table No. 7.—Statement of profit and loss on business operations for fiscal year ended June 30, 1920.

	Cost.	Revenue.	Profit or loss
DEPARTMENT OF OPERATION AND MAINTINANCE.			
Construction and repairs. Shopwork Electric work Electric currents. Train service and use of rolling equipment. Try service. Service of other floating equipment. Pilotage Wharfage. Sales of water Panama waterworks. Panama pavements. Colon waterworks.	\$1,725,601.51	\$1,726,399.69 5,026,914.49 465,853.33 181,348.64 236.81	\$798.1
Electric work	456,650,70	465, 853, 33	182,291.5 9,202.6
Electric currents	174,692.06	181,348.64	6,656.5
Train service and use of rolling equipment	198.30	236.81	38.5 176,774.4 6 552.7
Tug sorvice.	401,144.61	236.81 324,370.12 81,243.71 78,105.00 32,206.97 239,719.31 110,600.10 15,823.07 69,271.49 7,094.66 65,518.00	
Pilotage	62,610,74	78, 105, 00	6,552.7 15,494.2 7,253.6 27,780.0
Wharfage.	24,953.36	32, 206. 97	7,253.6
Sales of water	24, 935, 36 211, 939, 26 110, 600, 10 15, 823, 07 69, 271, 49 7, 094, 66	239, 719.31	27, 780.0
Panama waterworks	110,600.10	110,600.10	
Colon waterworks	69 271 49	69 271 49	
Colon payements	7,094.66	7.094.66	
Colon pavements Handling lines on docks Handling lines on locks Steamship inspection	84, 673, 99	65, 518, 00	1 19, 155. 9 1 2, 630. 6 1, 639. 4
Handring lines on locks	4,064.68 1,346.34 85,779.98	1,434.00 2,985.75 85,779.98	1 2,630.6
Steamship inspection	1,346.34	2,985.75	1,639.4
Dredging Minor services, supplies and property	22,031.10	23,386.77	1,355.6
Dry dockage:	1		
Dry dockage: Balboa.	121, 905. 42 26, 187. 18	148, 206. 53 35, 502. 04	26,301.1 9,314.8
Cristobal	26, 187. 18	35, 502. 04	9,314.8
Total department of operation and maintenance	8,525,882.44	8,722,000.46	196,118.0
SUPPLY DEPARTMENT.			
Subsistence: Hotel Tivoli	203 433 16	205 533 00	2 000 8
Hotel Aspinwall	56, 204, 97	45, 240, 51	1 10, 964, 4
Hotel Tivoli Hotel Aspinwall Line hotels	203, 433. 16 56, 204. 97 739, 177. 27 160, 131. 65	205, 533. 00 45, 240. 51 665, 764. 15 158, 822. 85 1, 941. 13	2,099.8 <sup>1</sup> 10,964.4 <sup>1</sup> 73,413.1 <sup>1</sup> 1,308.8 1,941.1
Messes	160, 131.65	158,822.85	1 1,308.8
Minor services, supplies, and property		1,941.13	1,941.1
Total subsistence	1,158,947.05	1,077,301.64	1 81,645.4
QUARTERMASTER.			
Material from stock	1,638,597.07 1,006,393.61 29,583.65 55,336.26	1,689,321.79 1,228,133.66 29,583.65 54,940.85	50,724.75 221,740.08
Fuel oil Rock, sand, gravel, and screenings	1,006,393.61	1, 228, 133.66	221,740.0
Rock, sand, gravel, and screenings	29,583.65	29,583.65	1 395.4
Corral	146, 449. 96	147, 307. 50	857.5
Rental of gold quarters	829.97	829.97	
Printing and binding Orral Rental of gold quarters Rental of silver quarters	148, 936. 89 2, 946. 52	829.97 117,346.19 8,601.04	1 31, 590. 70 5, 654. 5
	2,946.52	8,601.04	5,654.5
Ancon nursery. d. ndling fuel oil pperation of stores.  Deperation of quarters.	5,545.94	5,545.94	68, 992. 9
Deration of stores	77, 456.35 54, 047.97	146, 449. 32 54 047 97	03, 992. 9
Operation of quarters.	140,600,00	54,047.97 140,600.00	232.0
finor services, supplies, and property	140, 600.00 177, 929.90	178,161.93	232.0
Minor services, supplies, and property. Las Cascadas, silver settlement.	4,035.11		
Total quartermaster	3,488,689.20	3,804,904.92	316, 215. 72
ACCOUNTING DEPARTMENT.			
Lost metal checks.	17 35	379.12	261 77
	17.35 1.511.56	1 979 34	361.7° 467.78
ervice to Panama Railroad Company	1,511.56 228,160.05	1,979.34 228,161.77	1.7
ablegrams. dervice to l'anama Railroad Company. afety deposit boxes. ainor services, supplies, and property.	529, 60	529, 60	
amor services, supplies, and property	103.76	103.76	
Total, accounting department	230, 322, 32	231, 153. 59	831.27
HEALTH DEPARTMENT.			
Ancon Hospital:	469 657 50	240 763 47	1 212 804 10
	17, 230, 93	17, 230, 93	1 212, 894. 12
Mess	7, 851, 40	249, 763, 47 17, 230, 93 7, 851, 40 2, 491, 48	
Mess Burials		9 401 49	
Fees. Mess Burials Miscellancous.	2, 191. 48	2,491.43	
	462, 657, 59 17, 230, 93 7, 851, 40 2, 491, 48		1.0.000.55
OION HOSPITAL:	38, 156, 14	31, 167, 57	1 6,988.57
OION HOSPITAL:	38, 156, 14	31, 167, 57	1 6,988.57

Table No. 7.—Statement of profit and loss on business operations for fiscal year ended June 30, 1920—Continued.

	Cost.	Revenue.	Profit or loss
HEALTH DEPARTMENT—continued.			
Quarantine:			
Subsistence	\$32,804.84	\$33,897.07	\$1,092.23
Other charges	8,058.97	8, 058. 97	
Sanitation: Panama	10,976.59	10,976.59	
Colon	14, 937, 76	14, 937. 76	
7000	15, 754. 78	15, 754. 78	
Street cleaning, garbage collection, disposal, and incineration:			
Panama	88,093.38	57, 326. 04	1 30, 767. 34
Colon	30, 361. 18	30,361.18	• • • • • • • • • • • • • • • • • • • •
Produce	15,364.33	15,364.33	
Pasturage	127.10	127.10	
Burials	931.50	931.50	
Insane asylum	50, 247. 14	80,570.33	30, 323. 19 3, 217. 61 1 478. 42
Sales from medical store	22,815.63	26,033.24	3,217.61
Dental service	478.42	• • • • • • • • • • • • • • • • • • • •	1 478, 42
Total, health department	859, 909, 54	639,063.89	1 220, 845. 65
CIVIL GOVERNMENT.			
School tuition	5, 459. 00	5, 459, 00	
Sale of school books	917.84	913.56	1 4, 28
Police service	33 360 38	33, 360. 38	
Postal service	6,082.56 9,887.07	6,082.56	
Minor services, supplies, and property	9,887.07 920.50	9,493,82 920,50	1 393, 25
Inspection of nodsenoid goods	920. 50	920, 50	
Total, civil government	56,627.35	56, 229. 82	1 397, 53
EXECUTIVE DEPARTMENT.			
Service to Panama Railroad Company	88, 364, 41	88, 364, 41	
Photographs and prints	1,379.30	1,379.30	
Motor-car service Minor services, supplies, and property Canal Record. Lost photograph identification checks	9,837.80	9,858.00	20, 20
Minor services, supplies, and property	160.03	160, 03	
Canal Record.	106.06	212.11 335.94	106.05 150.04
Sale of annual reports	185, 90 24, 80	24.80	100,04
cate of annual reports	24.00	24.00	
Total, executive department	100,058.30	100, 334. 59	276, 29
MISCELLANEOUS.			
Land rental	13,856.64	22,583.84	8,727.20
Building rental	4,013.76	7,400.27	8,727.20 3,386.51
Land-office expense	9,000.00	9,000.00	
Joint commission transcripts	7. 20 46. 68	7, 20 46, 68	
Equipment rental	18, 162, 99	34,999.98	16,836.99
Boathouse rental	162. 22	344.94	182.72
Total, miscellaneous	45, 249, 49	74, 382. 91	29, 133. 42
Total	14 465 695 60	14 705 271 99	239, 686, 13

<sup>1</sup> Credit.

Table No. 8.—Construction of Canal, and capital additions, fiscal year 1920, and totals to June 30, 1920.

# [Amounts include Canal overhead.]

	Construction of Canal, total to June 30, 1920.	Capital additions, total to June 30, 1920.	Total to June 30, 1920.
Construction of Canal:			
Prism excavation—			
Gatun to sea	\$11,874,182.88 107,009,684.71		\$11,874,182.88 107,009,684.71
Pedro Miguel to sea (Tables Nos. 23 and 24)	18, 306, 625. 34		18, 306, 625.34
		-	
Total prism excavation	137, 190, 492. 93		137, 190, 492. 93
Gatun locks	35, 726, 193, 26 15, 704, 575, 93 23, 085, 209, 37 4, 081, 516, 86 1, 320, 389, 95 9, 823, 140, 60 140, 635, 01 66, 385, 47 431, 703, 66 1, 159, 789, 78 748, 054, 48		35, 726, 193, 26 15, 704, 575, 93 23, 085, 209, 37 4, 081, 516, 86 1, 320, 389, 95 9, 823, 140, 60 140, 635, 01 66, 385, 47 431, 703, 66 1, 159, 789, 78 748, 054, 48
Pedro Miguel locks	15, 704, 575. 93		15, 704, 575. 93
Miraflores locks.	23,085,209.37		23,085,209.34
Miraflores spillway and east dam	1, 320, 389 95		1,320,389.95
Gatun dom.	9, 823, 140.60		9,823,140.60
Petro Miguel Joeks Miraflores locks. Gatun spillway. Miraflores spillway and east dam. Gatun dum. Gatun-Mindi levee. Tripidad River dam. Pedro Miguel dams. Misel Jones Work days.	140, 035, 01		140, 635, 01
Pedro Miguel dams.	431, 703. 66		431, 703. 66
Miraflores West dam	1, 159, 789. 78		1, 159, 789, 78
Miraflores West dam. La Boca locks and dams (abandoned). Colon East breakwater.	3 771 111 74		3 771 111 74
Colon West b eakwater Noas Island b eakwater	3,771,111.74 4,275,316.42		4, 275, 316, 42
Noas Island b eakwater	1,015,649,78		1,015,649.78
Aids to navigation. Improvements—Cristobal Harbor.	868, 619.33 162, 619.80		868, 619. 33 162, 619. 80
		-	
Total, Canal	102, 380, 911. 44		102, 380, 911. 44
Auxiliary works: Power producing and transmitting system (Table No. 21)—			
Gatun hydroelectric plant	1,648,990.55	\$3, 484. 55	1,652,475.10
Miraflores steam-electric plant. Substations, transmission, and distribution lines.	307, 485. 78		307, 485. 78
Street lighting, townsites	90, 033, 26	6,728.03	3, 708, 200, 14 96, 761, 29
Underground duct system, townsites	1, 648, 990, 55 307, 485, 78 3, 700, 591, 52 90, 033, 26 393, 289, 93 6, 140, 391, 04	67, 608, 62 6, 728, 03 15, 523, 22 93, 344, 42	408, 813. 15
Total power producing and transmitting system.	6, 140, 391. 04	93, 344. 42	1, 652, 475, 10 307, 485, 78 3, 768, 200, 14 96, 761, 29 408, 813, 15 6, 233, 735, 46
Pacific terminals—			
Coiling station	2, 284, 568, 35	12, 200. 83	2, 284, 568, 35 436, 387, 52
Fuel-oil plant. Dry dock.	3, 539, 554, 91	12, 200. 65	3,539,554.91
Docks	394, 126, €9 3, 539, 554, 91 3, 184, 964, 31		3, 184, 964. 31
Dredging inner harbor	3,000,661.57 489,480.39		3,060,661.57 489,480.39
Entrance basin. Preparatory work.	1, 808, 921. 65		1,808,921.65
		12 212 22	
Total. Pacific terminals	14,762,277.87	42, 260.83	14,804,538.70
Atlantic terminals—			
Cooling station	3,679,797.59	47, 952. 09	3, 679, 797. 59 358, 065. 09
Fuel-oil plant. Dry dock Docks	310, 113. 00 73, 475, 51	47, 802.08	73, 475, 51
Docks	73, 475. 51 2, 208, 996. 80		73, 475. 51 2, 208, 996. 80
Total, Atlantic terminals	6, 272, 382. 90	47, 952, 09	6, 320, 334. 99
Gatun dock	8, 951. 33		8,951.33
Permanent townsites (Table No. 22)—			
Cristobal	122, 040. 71	206, 385, 60	328, 426, 31
Gatun	1,704.70 91,709.06	71.86	1,776.56 96,797.08
Pedro Miguel	2,614,43	5,088.02	2,614.43
Balboa-Ancon	2,614.43 582,063.04	14, 216, 59	596, 279. 63
La Boca	123, 206. 13		123, 206. 13
Total, permanent townsites	923, 338. 07	225, 762.07	1, 149, 100. 14

Table No. 8.—Construction of Canal, and capital additions, fiscal year 1920, and totals to June 30, 1920—Continued.

	Construction of Canal, total to June 30, 1920.	Capital additions, total to June 30, 1920.	Total to June 30, 1920.
Buildings (Table No. 20): Designing and preliminary expenses— Offices—			APA - Maria -
Administration, Balboa Administration, Santa Rosa Balboa shops Balboa terminals	\$1,224,847.51 130,892.39 238,553.94 80,634.42		\$1,224,847.51 130,892.39 238,553.94 80,634.42
Shops— Balboa	3,970,490.55	\$11,801.92 43,444.79	3, 982, 292, 47 206, 647, 93
Storehouses Hotels and mess balls Gold quarters Silver quarters	3,970,490,55 163,203,14 1,009,428,68 487,238,87 4,464,143,75 672,242,62 1,695,220,06 255,506,90	128, 484, 27 80, 413, 00 292, 114, 92 199, 821, 83	3,982,292.47 206,647.93 1,137,912.95 567,651.87 4,756,258.67 872,064.45 1,695,220.96 255,506.90
Storehouses. Hotels and mess halfs. Gold quarters. Silver quarters. Ancon Hospital Colon Hospital Dispen aries. Asylums Quarantine station. Medical storehouses.	1,695,220.06 255,506.90 161,213.97 207,994.56 72,469.36		1,695,220.96 255,506.90 161,213.97 249,280.31 80,258.48
Mi cellaneous buildings, health department	160 057 70	41, 285, 75 7, 789, 12 49, 740, 25	95 471 15
Post offices Schoolhouses Courthonies, police and firestations, jails, etc. Fluviographs Miscellaneous buildings.	35, 982, 62 482, 561, 68 100, 884, 23 13, 709, 02 470, 886, 52	9,709.55 1,043.27	218, 798, 04 35, 982, 62 492, 271, 23 101, 927, 50 13, 709, 02 756, 137, 42
Total buildings. Playgrounds, including Balboa grand stand	16, 132, 633. 73 54, 474. 41	285, 250, 90 1, 150, 899, 57	17, 283, 533. 30 54, 474. 41
Sanitary fills Sanitary ditches Landscape improvements	636, 732. 11 157, 248. 23 34,/847. 85	25, 921. 40	636, 732, 11 183, 169, 63 34, 847, 85
Waterworks systems: Colon-Cristobal. Panama-Gamboa.	585, 642, 89 1, 765, 222, 58		585, 642. 89 1, 765, 222. 58
Other Zone systems— General Townsites.	560, 876, 89 131, 946, 43	11,584.68 1,969.92	572, 461, 57 133, 916, 35
Total, waterworks systems	3,043,688.79	13, 554. 60	3,057,243.39
Roadways, streets, and walks: Roadways. Streets. Walks.	520, 118.33 527, 283.83 90, 161.03	358, 076, 82 52, 295, 47 27, 073, 28	878, 195, 15 579, 579, 30 117, 234, 31
Total, roadways, streets, and walks	1, 137, 563. 19	437, 445, 57	1,575,008.76
Zone sewage system: General. Townsites.	76, 457. 15 358, 089. 54	28, 864. 50 34, 873. 50	105, 321. 65 392, 963. 04
Total, Zone sewage system	434, 546. 69	63,738.00	498, 284. 69
Real estate: For joint land commission expenses. For Canal construction and flooded areas. For auxiliary works and buildings. For depopulation of the Canal Zone.	354, 870. 67 891, 722. 06 146, 258. 94 2,336, 207. 63		354, 870, 67 891, 722, 06 146, 258, 94 2, 336, 207, 63
Total, real estate.	3,729,059.30		3,729,059.30
Miscellaneous: Floating caisson Relocation Panama Railroad. Investment Panama Railroad stock Concessions from Repul lie of Panama Purchase from New Panama Canal Co.	347, 868, 15 9, 800, 626, 46 155, 818, 24 10, 000, 000, 00 38, 721, 690, 16		347, \$68. 15 9, 800, 626. 46 155, \$18. 24 10, 000 000, 00 38, 721, 690, 16
Total, miscellaneous	59,026,003.01		59,026,003.01
Total, construction of Canal.	352,065,542.89	2,100,878.55	354, 166, 421. 44

Table No. 9.—Detail of miscellaneous receipts, United States funds.

	Fiscal year 1920.	Total to date.
Receipts involving no appropriation expenditures: Subsidies from Panama Raifroad Company Dividends on Panama Raifroad stock Interest on reequipment loan. Interest on first mortgage bond loan. Interest on public works, Panama and Colon Interest on Zone water-supply systems, proportiou. Interest on bank balances Wiscellaneous rentals		\$631,875.00 344,945.00 320,799.11 152,395.16 402,270.49
Interest on first mortgage bond loan Interest on public works, Panama and Colon Interest on Zone water-supply systems, proportion	\$10,961.49 13,793.01 50,000.00	152,395,16 402,270,49 123,991,09 73,147,30
Miscellaneous rentals. Overages. Forfeitures Salvacing steamship Moselle Miscellaneous	10.12	243, 213, 03 520, 82 807, 82 210, 50
Miscellaneous.	6,341.13	6,496.54
Total	116,478.52	2,300,701.86
Iteceipts involving expenditures from appropriations:  Not credited to assets— Capital cost, Panama waterworks and sewers. Capital cost, Panama pavements. Capital cost, Colon waterworks and sewers Capital cost, Colon pavements. Tolls. Licenses and taxes. Court fees and fines Post receipts. Miscellaneous, Canal Zone. Profit on business operations 1.		84, 158, 03 70, 475, 19 78, 323, 89 73, 933, 97 33, 303, 581, 67 68, 376, 70 192, 138, 72 516, 045, 27 5, 186, 57 358, 199, 65
Total	9,058,441.60	34,660,419.06
Credits to assets: Sale of property. Sale of French material and equipment. Sale of Panama Canal building in city of Panama. Sale of water.	329.19	850, 500. 11 123, 992. 69 80, 000. 00 255. 43
Mess accounts. Hospital receipts. Quarantine receipts Laundry receipts.		46, 879, 48 79, 992, 68 24, 900, 53 7, 382, 01
Rental of lands and buildings Rentals, miscellaneous Telegraph and telephone receipts. Hotels and messes		41,427.24 137,822.99 3,547.35 758,470.34
Hotel coupen books. Corral receipts. Labor furnished Panama Railroad Company.		758, 470, 34 32, 238, 28 8, 628, 56 180, 336, 97
Repayments, equipment loan Repayments, first mortgage bond loan Sale of Panama Railroad steck		27, 449, 55 1,387, 714, 92 300, 000, 00 1,300, 00
Rental of lands and buildings Rentals, miscellaneous Telegraph and telephone receipts. Hotels and messes Hotel coupen books Corral receipts. Labor furnished Panama Railroad Company Other labor turnished Repayments, equipment Ican Repayments, equipment Ican Repayments, first mortrage bond loan Sale of Panama Railroad stock Miscellaneous Sale of construction material and equipment Profit on business operations 1 Forfeitures by contractors	174,440.69 (118,512.92)	1,300.00 93,805.47 1,016,202.18
Total Grand total.	56, 256, 96 9, 231, 177, 08	5,215,140.30 42,176,261.22
Miscellaneous receipts deposited in United States Treasury		41,654,083.70 147,664.86
Amount of water rentals. Panama and Colon, denosited as miscellaneous	833, 152. 66 738, 973. 61	94, 179, 05
Profit on business operations, 1920, not transferred to miscellaneous receipts		239, 686. 13
oupaid bins		42, 176, 261, 22

 $<sup>^{-1}</sup>$  Profits on business operations prior to July 1, 1919, transferred from miscellaneous receipts credited to assets, to miscellaneous receipts not credited to assets.

# Table No. 10.—Detail of equipment.

TABLE NO. 10.—Detail of equipment.		
Floating equipment:		
Floating equipment: Steamshirs Ancon and Cristobal. Colliers Ulysses and Achilles Tugs and supply boats. Launches. Dredges. Barges Floating cranes Ajax and Hercules. Miscellaneous floating equipment.	\$2, 164, 357.31	
Colliers Ulysses and Achilles	2, 029, 232.05	
Laurehea	916,581.54	
Dredge	1 224 666 60	
Barges	1 072 761 76	
Floating cranes Ajax and Hercules	906, 212, 71	
Miscellaneous floating equipment	182, 295. 36	
Total floating equipment		\$8,679,119.2
Other equipment: Automobiles and trucks.	015 054 10	
Cranes.	210, 204. 10	
Motor cars.	11, 250, 00	
Road rollers	25, 281, 00	
Miscellaneous	215, 254. 18 208, 977. 02 11, 250. 00 25, 281. 00 83, 294. 21	
The tall of the an action count		
Total other equipment	• • • • • • • • • • • • • • • • • • • •	<b>4</b> 44,056.41
Electrical division.  Municipal engineering division.  Mechanical division  Building division	1 208 20	
Municipal engineering division	58 209 17	
Mechanical division	377, 070, 15	
Building division	47,043,38	
Subsistence.	102, 504. 52	
Panama Canal press	1, 398. 39 58, 209. 17 377, 070. 15 40, 043. 38 102, 504. 52 2, 831. 57	
Total machinery and tools.		ESO OFT 10
		582, 057. 18
Total		9, 805, 232. 82
Table No. 11.—Detail of work in progress.		
211212 1.0. 11. Detail of work in progress.		
Uncompleted work mechanical division		\$759 744 ST
Uncompleted work, mechanical division Uncompleted work, other divisions		179 217 88
Total		. 937,962.45
		. 937, 962. 45
TARKE NO. 12 Detail of waterial and assembly		. 937,962.45
TARKE NO. 12 Detail of waterial and assembly		. 937,962.45
TARKE NO. 12 Detail of waterial and assembly		. 937, 962. 45
Table No. 12.—Detail of material and suppli		. 937, 962. 45
Table No. 12.—Detail of material and suppli		. 937, 962. 45
Table No. 12.—Detail of material and suppli		. 937, 962. 45
Table No. 12.—Detail of material and suppli		937,962.45
Table No. 12.—Detail of material and suppli	es. 83, 841, 805. 25 830, 888. 41 653, 582 66 131, 021. 15 22, 472 85 109, 605. 55	937, 962. 45
Table No. 12.—Detail of material and suppli Balboa store. Cristotal store Paraiso store. Medical store. Stationery store, administration building. Printing-plant store. Fuel oil.		. 937,962.45
Table No. 12.—Detail of material and suppli Balboa store. Cristotal store Paraiso store. Medical store. Stationery store, administration building. Printing-plant store. Fuel oil.	es. 83, 841, 805. 25 830, 888. 41 653, 582 66 131, 021. 15 22, 472 85 109, 605. 55	937, 962. 45
Table No. 12.—Detail of material and suppli Balboa store. Cristotal store Paraiso store. Medical store. Stationery store, administration building. Printing-plant store. Fuel oil.	es. 83, 841, 805. 25 830, 888. 41 653, 582 66 131, 021. 15 22, 472 85 109, 605. 55	937, 962. 46
Table No. 12.—Detail of material and suppli Balboa store. Cristotal store Paraiso store. Medical store. Stationery store, administration building. Printing-plant store. Fuel oil.	es. 83, 841, 805. 25 830, 888. 41 653, 582 66 131, 021. 15 22, 472 85 109, 605. 55	937, 962. 46
Table No. 12.—Detail of material and suppli	83, 841, 805. 25 830, 888. 41 653, 582. 66 131, 021. 15 22, 472. 85 109, 605. 55 25, 959. 10	. 937, 962. 46
Table No. 12.—Detail of material and supplist	88. 33, 841, 805, 25 830, 888, 41 653, 582, 66 131, 021, 15 22, 472, 85 109, 605, 55 25, 959, 10 39, 191, 07	
Table No. 12.—Detail of material and supplist Balboa store. Cristobal store. Paraiso store. Medical store. Stationery store, administration building. Printing-plant store. Fuel oil. District quartermaster's stores: Cristobal. Gatun. 28, 510.02 Paraiso-Pedro Miguel. 1, 115. 12 Balboa-Ancon. 3, 465.93  Total quartermaster's stores.	es. 33, 841, 805, 25 830, 888, 41 653, 582 66 131, 021, 15 22, 472 85 109, 605, 55 25, 959, 10  39, 191, 07	55, 854, 526, 04
Table No. 12.—Detail of material and supplication of the store of the	es. 33, 841, 805. 25 830, 888. 41 653, 582 66 131, 021. 15 22, 472 85 109, 605. 55 25, 959. 10 39, 191. 07	55, 854, 526, 04
Table No. 12.—Detail of material and supplication of the store of the	es. 33, 841, 805. 25 830, 888. 41 653, 582 66 131, 021. 15 22, 472 85 109, 605. 55 25, 959. 10 39, 191. 07	\$6, 654, 526. 04 1 23, 565. 21 27, 365. 11
Table No. 12.—Detail of material and supplist Balboa store. Cristobal store. Paraiso store. Medical store. Stationery store, administration building. Printing-plant store. Fuel oil. District quartermaster's stores: Cristobal. Gatun. 28, 510.02 Paraiso-Pedro Miguel. 1, 115. 12 Balboa-Ancon. 3, 465.93  Total quartermaster's stores.	es. 33, 841, 805. 25 830, 888. 41 653, 582 66 131, 021. 15 22, 472 85 109, 605. 55 25, 959. 10 39, 191. 07	55, 854, 526, 04
### TABLE No. 12.—Detail of material and supplice	88. 33, 841, 505. 25 830, 888. 41 653, 582 66 131, 021. 15 22, 472 85 109, 605. 55 25, 959. 10  39, 191. 07	\$6, 654, 526. 04 1 23, 565. 21 27, 365. 11 546, 618. 22
### TABLE No. 12.—Detail of material and supplice	88. 33, 841, 505. 25 830, 888. 41 653, 582 66 131, 021. 15 22, 472 85 109, 605. 55 25, 959. 10  39, 191. 07	\$6, 654, 526. 04 1 23, 565. 21 27, 365. 11 546, 618. 22
Table No. 12.—Detail of material and supplist Balboa store.  Cristobal store. Paraiso store. Medical store. Stationery store, administration building. Printing-plant store. Fuel oil. District quartermaster's stores: Cristobal. Gatun. 28, 510.02 Paraiso-Pedro Miguel. 1, 115.12 Balboa-Ancon. 3, 465.93  Total quartermaster's stores. Containers in transit. Obsolete store. Material drawn by divisions not yet charged to work.  Total. Less price adjustments, unpaid invoices, etc.	es. 33, 841, 805. 25 830, 888. 41 653, 582 66 131, 021. 15 22, 472 85 109, 605. 55 25, 959. 10  39, 191. 07	65, 654, 526. 04 1 23, 565. 11 27, 365. 11 546, 618. 22 6, 204, 944. 16 333, 239 68
### TABLE No. 12.—Detail of material and supplice	es. 33, 841, 805. 25 830, 888. 41 653, 582 66 131, 021. 15 22, 472 85 109, 605. 55 25, 959. 10  39, 191. 07	65, 654, 526. 04 1 23, 565. 11 27, 365. 11 546, 618. 22 6, 204, 944. 16 333, 239 68
Table No. 12.—Detail of material and supplis  Balboa store	es. 33, 841, 805. 25 830, 888. 41 653, 582 66 131, 021. 15 22, 472 51 109, 605. 55 25, 959. 10 39, 191. 07	\$6, 854, 526. 04 1 23, 565. 21 27, 365. 11 546, 618. 22 6, 204, 944. 16 333, 239 68 5, 871, 704. 48
Table No. 12.—Detail of material and supplis  Balboa store	es. 33, 841, 805. 25 830, 888. 41 653, 582 66 131, 021. 15 22, 472 51 109, 605. 55 25, 959. 10 39, 191. 07	\$6, 854, 526. 04 1 23, 565. 21 27, 365. 11 546, 618. 22 6, 204, 944. 16 333, 239 68 5, 871, 704. 48
Table No. 12.—Detail of material and supplis  Balboa store	es. 33, 841, 805. 25 830, 888. 41 653, 582 66 131, 021. 15 22, 472 85 109, 605. 55 25, 959. 10  39, 191. 07	65, 654, 526. 04 1 23, 565. 11 27, 365. 11 546, 618. 22 6, 204, 944. 16 333, 239 68 5, 871, 704. 48 ent.
Balboa store. Cristobal store. Paraiso store. Medical store. Stationery store, administration building. Printing-plant store Fuel oil. District quartermaster's stores: Cristobal. Gatun. Gatun. Gatun. Total quartermaster's stores. Cristobal.  Total quartermaster's stores. Containers in transit. Obsolete store. Material drawn by divisions not yet charged to work.  Total. Less price adjustments, unpaid invoices, etc. Net book value, material and supplies.  TABLE No. 13.—Detail of assets received from the Canal Zon Waterworks.	188. 183, 841, 805. 25 1830, 888. 41 1653, 582. 66 181, 021. 15 22, 472. 85 109, 605. 55 25, 959. 10  39, 191. 07	\$6, 654, 526. 04 1 23, 565. 21 27, 365. 11 546, 618. 22 6, 204, 944. 16 333, 239 68 5, 871, 704. 48 ent.
Balboa store. Cristobal store. Paraiso store. Medical store. Stationery store, administration building. Printing-plant store Fuel oil. District quartermaster's stores: Cristobal. Gatun. Gatun. Gatun. Total quartermaster's stores. Cristobal.  Total quartermaster's stores. Containers in transit. Obsolete store. Material drawn by divisions not yet charged to work.  Total. Less price adjustments, unpaid invoices, etc. Net book value, material and supplies.  TABLE No. 13.—Detail of assets received from the Canal Zon Waterworks.	188. 183, 841, 805. 25 1830, 888. 41 1653, 582. 66 181, 021. 15 22, 472. 85 109, 605. 55 25, 959. 10  39, 191. 07	\$6, 654, 526. 04 1 23, 565. 21 27, 365. 11 546, 618. 22 6, 204, 944. 16 333, 239 68 5, 871, 704. 48 ent.
Balboa store. Cristobal store. Paraiso store. Medical store. Stationery store, administration building. Printing-plant store Fuel oil. District quartermaster's stores: Cristobal. Gatun. Gatun. Gatun. Total quartermaster's stores. Cristobal.  Total quartermaster's stores. Containers in transit. Obsolete store. Material drawn by divisions not yet charged to work.  Total. Less price adjustments, unpaid invoices, etc. Net book value, material and supplies.  TABLE No. 13.—Detail of assets received from the Canal Zon Waterworks.	188. 183, 841, 805. 25 1830, 888. 41 1653, 582. 66 181, 021. 15 22, 472. 85 109, 605. 55 25, 959. 10  39, 191. 07	\$6, 654, 526. 04 1 23, 565. 21 27, 365. 11 546, 618. 22 6, 204, 944. 16 333, 239 68 5, 871, 704. 48 ent.
Balboa store. Cristobal store. Paraiso store. Medical store. Stationery store, administration building. Printing-plant store Fuel oil. District quartermaster's stores: Cristobal. Gatun. Gatun. Gatun. Total quartermaster's stores. Cristobal.  Total quartermaster's stores. Containers in transit. Obsolete store. Material drawn by divisions not yet charged to work.  Total. Less price adjustments, unpaid invoices, etc. Net book value, material and supplies.  TABLE No. 13.—Detail of assets received from the Canal Zon Waterworks.	188. 183, 841, 805. 25 1830, 888. 41 1653, 582. 66 181, 021. 15 22, 472. 85 109, 605. 55 25, 959. 10  39, 191. 07	\$6, 854, 526. 04 1 23, 565. 21 27, 365. 11 546, 618. 22 6, 204, 944. 16 333, 239 68 5, 871, 704. 48 ent.
Table No. 12.—Detail of material and supplis  Balboa store	188. 183, 841, 805. 25 1830, 888. 41 1653, 582. 66 181, 021. 15 22, 472. 85 109, 605. 55 25, 959. 10  39, 191. 07	\$6, 854, 526. 04 1 23, 565. 21 27, 365. 11 546, 618. 22 6, 204, 944. 16 333, 239 68 5, 871, 704. 48 ent.
Table No. 12.—Detail of material and supplies  Balboa store	es. 33, 841, 805. 25 830, 888. 41 653, 582 66 131, 021. 15 22, 472 85 109, 605. 55 25, 959. 10  39, 191. 07	86, 854, 526. 04 1 23, 565. 21 27, 365. 11 546, 618. 22 6, 204, 944. 16 333, 239 68 5, 871, 704. 48 ent. \$10, 500.00 \$00.00 451, 887. 50 72, 115. 00 2, 289 87
Balboa store. Cristobal store. Paraiso store. Medical store. Stationery store, administration building. Printing-plant store Fuel oil. District quartermaster's stores: Cristobal. Gatun. Gatun. Paraiso-Pedro Miguel. Balboa-Ancon.  Total quartermaster's stores. Containers in transit. Obsolete store. Material drawn by divisions not yet charged to work.  Total. Less price adjustments, unpaid invoices, etc. Net book value, material and supplies.  TABLE No. 13.—Detail of assets received from the Canal Zon Waterworks.	es. 33, 841, 805. 25 830, 888. 41 653, 582 66 131, 021. 15 22, 472 85 109, 605. 55 25, 959. 10  39, 191. 07	86, 654, 526, 04 1 23, 565, 21 27, 365, 11 546, 618, 22 6, 204, 944, 16 333, 239 68 5, 871, 704, 48 ent. \$10, 500, 00 \$,000, 00 451, 887, 50 72, 115, 00 2, 289 87

## Table No. 14.—Detail of assets transferred to other departments of the United States Government.

C, O CO. TOWARD		
To Army on Canal Zone:		
Waterworks system—		
Las Cascadas	\$14,250.00	
Empire	278, 300, 00	
Las Cascadas Empire Culebra Corozal	12,000.00	
Corozal	6,500.00	
Martin martin market market		6911 050 00
Total waterworks		\$311,050.00
Sewer systems— Las Cascadas.	11 500 00	
Empire.	11,500.00 23,500.00	
Culebra	9,500.00	
Corozal	6,000.00	
-		
Total sewer system.		50,500.00
Roads		
Las Cascadas. Empire Culebra	50,700.00	
Empire	140, 500, 00	
Culebra	40,000.00	
Corozal	18,000.00	
Total roads.		249, 200, 00
Buildings—		243, 200.00
Las Cascadas	126, 416, 00	
Empire	369, 749, 17	
Culebra	244,586,41	
Corozal	206, 552, 25	
Gatun.	50, 782, 65	
Cristobal	13, 248, 00	
Margarita Island	375.50	
Toro Point.		1 007 800 00
Chagres River tract		1,035,786.22
Railroad tracks, Fort Amador		69, 861. 99 8, 773. 00
Total transferred to Army.  To State Department, legation building, Panama City To Alaskan Engineering Commission—Equipment To Army and Navy on Canal Zone, boathouse, Colon		1 725 171 21
To State Department, legation building, Panama City		22, 256, 00
To Alaskan Engineering Commission—Equipment.		337, 912, 21
To Army and Navy on Canal Zone, boathouse, Colon		2,003.25
	-	<del></del>
Total	• • • • • • • • • • • • • • • • • • • •	2,087,342.67
Table No. 15 Detail of Panama Canal equipment and property open	ated by th	he Panama
Railroad.		
Locomotives		\$309, 468, 85
Steel flat cars		257, 934, 62
Oliver dump cars		225, 332, 90
Lidgerwood flat cars Floating equipment (barges and launches).		85, 307, 22
Floating equipment (barges and launches)		132, 813. 26
Other miscellaneous equipment		50, 711. 73
Wooden dock, Cristobal. Steamships:		40,000.00
Panama	100 000 00	
Colon	400,000.00	
Caribbean	157 304 60	
Colon Caribbean Culebra	109, 325, 00	
		1,066,629.60
	_	
Total		2, 168, 198. 18
TABLE No. 16.—Detail of Panama Railroad equipment and proper	ty operat	ed by The
Table No. 16.—Detail of Panama Railroad equipment and proper Panama Canal.	,	
Mark and the second		007 6
Floating equipment		\$35,035.00
Other equipment		19, 136, 72
Buildings and structures. Concrete dock, Balboa.		272 742 10
Control dock, Daibout	*********	010, 142, 10

Table No. 17.—Detail of reserves for gratuity, depreciation, and repairs.

TABLE NO. 17.—Detail of reserves for gratuity, depreciation	n, and repo	urs.
Gratuity: Building division. Electrical division. Weekended this idea.	\$116,9°9.82 86,749.47	
Mechanical division Municiral engineering division Forti ications Miscellaneous	\$116, 9°9. 82 86, 749. 47 239, 300. 08 47, 360. 92 34, 2°0. 66 288, 940. 06	
Depreciation: Fquir ment—		\$813,591.01
Turs and supply boats.  Launches.  Dredres.  Barres. Floating granes.  Miscellaneous.  Crane boat La Valley.  Graders 1, 2, and 3.  28, 406, 09	306, 833, 92 53, 095, 99 291, 691, 24 398, 121, 97 121, 662, 69 50, 627, 93	
Graders I, 2, and 3       25, 406, 09         Pile driver No. 2       1, 430, 79         Coal hoist No. 1       1, 264, 60         Drill barge Teredo No. 2       731, 25         Air compressor       7,062, 92		
Total. floatine equipment Automobiles and trucks. Cranes Railroad motor cars. Road rollers. Miszellaneous	94, 297, 38 71, 389, 45 2, 590, 12 13, 648, 14 8, 789, 75	1, 222, 033. 74
Total other equipment		190,714.84
Balboa store. Cristobal store. Cristobal oil house.	67,390.02 2,414.30 1,650.00	
Total buildings		71,454.32
Mount Hore fuel-oil plant.  Balboa fuel-oil plant Balboa dry dock Pier No. 18. Balboa Transmission system.	60, 432, 76 81, 335, 00 120, 000, 00 47, 030, 50 649, 028, 70	
Total structures and plants		957,826.96
Equipment— Turs and supply boats Launches Dredres Barres Floating cranes Miscellaneous	97,098.02 11,888.59 154,965.66 135,870.85 166,383.64 18,175.05	
Total floating equipment Railroad motor ears Road rollers. Miscellaneous (Balboa shops)	1,846.16 87.24 7,932.54	334,323.21
Total other equipment		9,865.94
Balhoa shons. Balhoa store. Cristobal store. Cristobal oil house.	1 15,802.57 22,2 0.73 23,781.80 1,597.66	·
Total buildings Structures and plants— Ballooa dry dock Ballooa fuel-oil plant Mount Hore fuel-oil nlant Ballooa and Mount Hope baseball parks Transmission system	1 5,946.10 66,587.20 57,507.51	31,827.62
	\$12.35 110,708.99	
Total structures and plants	_	108,251.97
Recapitulation:   Gratuity		9,700,000.01
Repairs—         2           Equipment         344,189.15           Structures         140,079.59	484,268.74	

Table No. 18.—Statement of equipment, material, and supplies paid from construction funds (bond issue) but not directly charged to Canal construction accounts.

Material and supplies on hand July 1, 1915. Less deducted for operation and maintenance.			\$4,374,860.10
Less deducted for operation and maintenance			2, 225, 000.00
·		-	
The state of the s			2,149,860.10
List of equipment purchased from construction funds with the			
value at which transcered for use in the maintenance and operation of The Panama Canal:			
operation of the Panama Canai.	\$728, 271, 88		
S. S. Aucon S. S. Cristobal	\$728,271.88 716,085.43		
Total, steamships		\$1,444,357.31	
Bordons	3,400.00 20,064.00 20,416.00 9,148.70		
B0010	20,064.00		
Cocoli	20,410.00		
Cocol Coco Solo			
Empire	25,405.50 46,013.64 11,692.80 156,921.65 19,747.20 21,511.80 36,496.75 29,000.00		
Engmeer Gatun Gorgona La Boca	11, 692, 80		
Corgona	156, 921, 65		
La Boca	19,747.20		
	21,511.80		
Miraflores. Porto Bello.	36,496.75		
Porto Bello	29,000.00		
Sanidad	4,010.00		
Tabernilla	156, 922. 79		
(Data) tura		564, 473, 83	
Total, tugs		001,410.00	
Launches: Aspin vall.	4,537.24 4,475.13		
Ashin van Atlantic Barbaeoas II	4, 475, 13		
Barbagas II	4, 562, 97		
Bonita	4, 562. 97 750. 00		
Barnacoas 11 Bonita Cruces Flamengo	4,419.25		
Flamengo	1,850.60		
Lirio	1,545.00		
Luiz	217.97		
Margaret	1,400.00		
Lirio. Luiz. Margaret. Pacific.	4,475.00		
Patrol. Patrique. Priscilla.	5,484.00 1,300.00		
Priscilla	4 414,75		
Psyche Santa Rita Search Snail	3,000.00 4,620.00 6,630.00		
Santa Rita	4,620.00		
Search	6,630.00		
Snail	625.00		
Shall No. 7. No. 8. No. 9. No. 10.	500.00 500.00		
No. 8	1,000.00		
No. 10	1,000.00		
No. 11	1,200.00	)	
No. 12	1,000.00 1,200.00 1,400.00		
No. 10 No. 11 No. 12 No. 26	2,890.00	)	
		- co =oc o:	
Total, launches. Clapet No. 7		62,796.91 5,950.00	
Clapet No. 7			
Dredges: Cascadas	446, 584, 10	)	
Camboa	273, 046, 56		
Gamboa. Marmot	446, 584.10 273, 046.56 18, 759.84	1	
	273,016.60	)	
No. 83	273, 016.60 34, 689.60 30, 536.00 70, 125.00	)	
No. 84	30, 536.00	)	
No. 83. No. 84. No. 86.	70, 125.00	)	
Total, dredges		1,146,757.70	1
Rormon:		· '	
II S No 3	7,650.00 9,856.00 11,000.00 11,000.00	)	
17	9,856.00	)	
18	11,000.00	)	
20	11,000.00	)	
36	1,000.00	,	
38	300.00 300.00	,	
39 46	8 061 00	ĺ	
4648	9 680 00	ń	
40	8,064.00 9,680.00 9,680.00	Ď	
50			
57	2,488.20	)	
91. 92.	678.00	J	
92	127.50		
	150.00		
95	403.01		
95. 96. 97.	2,400.00	) B	
97	2,245.70		

Table No. 18.—Statement of equipment, material, and supplies paid from construction funds (bond issue) but not directly charged to Canal construction accounts—Continued.

TY 0 37 00		
Barges - Continued, U.S. No. 98.	\$2,042.00	
101	7, 804.04	
102	7, 804.04 7, 804.04	
104		
104. 105. 106.	7,804.04	
106 107	7, 804. 04 7, 804. 04 7, 804. 04 10, 000. 00	
107	7 804 04	
105	7, 804.04	
116	7,313.80	
117	7, 804.04 7, 804.04 7, 313.80 7, 313.80	
117. 118. 119. 121.	7,313.80	
121	7,776.00	
192	7,776.00	
123. 131.	8,553.60	
199	67, 254, 19	
133	67, 254. 19	
134	67, 254. 19	
135	7,313.80 7,313.80 7,776.00 8,553.60 67,254.19 67,254.19 67,254.19 67,254.19 67,254.19 167,254.19	
135	71, 828, 69	
138	71, 828. 69 71, 828. 69 71, 828. 70	
139	71, 828. 70	
	78, 897.31 89, 394.84	
141 141 142	36 432 64	
1 (2	36, 432. 64 36, 432. 64	
144	36, 432. 64	
146. 145. 146.	36, 432. 64 36, 432. 64 4, 785. 89 4, 785. 89	
1.17	4, 785, 89	
148. 170. 171.	4,785.89 2,000.00 4,000.00	
170	2,000.00	
1/1	1,000.00	
179	2,160.00	
176. 179. 187. 202.	300.00	
202 217	255.00 935.00	
220	300.00	
220. 222.	255.00	
Total, barges.		
Total, parges		
Floating cranes:	• • • • • • • • • • • • • • • • • • • •	31, 173, 134.78
Floating cranes: Ajax	•	31, 173, 134. 78
Ajax Herculcs.	448,335.79 457,876.92	31, 173, 134. 78
Ajax Herculcs.	448,335.79 457,876.92	
Ajax Herculcs.	448,335.79 457,876.92	906, 212.71
Ajax Herculcs.	448,335.79 457,876.92	
Ajax Hercules.  Total, floating cranes.  Miscellaneous floating equipment: Drill barge Teredo, No. 2. Compresser barge No. 27 Derrick barge No. 161 Coal hoist No. 168. Un watering barge No. 169. Grader No. 1. Grader No. 3. Crane boat La Valle Floating pile driver Bruiser	448, 335. 79 457, 876. 92 15, 000. 00 20, 848. 00 21, 122. 00 30, 076. 85 43, 538. 77 22, 690. 30 19, 503. 00 2, 550. 00	906, 212. 71
Ajax. Herculcs.  Total, floating cranes. Miscellaneous floating equipment: Drill barge Teredo, No. 2. Compresser barge No. 27 Derrick barge No. 161. Coal hoist No. 168. Un watering barge No. 169. Grader No. 1. Grader No. 3. Crane boat La Vaile Floating pile driver Bruiser.  Total, miscellaneous floating equipment	448, 335. 79 457, 876. 92 15, 000. 00 20, 848. 00 21, 122. 00 30, 076. 85 43, 538. 77 22, 690. 30 19, 503. 00 2, 550. 00	
Ajax. Hercules.  Total, floating cranes.  Miscellaneous floating equipment: Drill barge Teredo, No. 2. Compresser barge No. 27. Derrick barge No. 161. Coal hoist No. 168. Un watering barge No. 169. Grader No. 1. Grader No. 3. Crane boat La Valle. Floating pile driver Bruiser  Total, miscellaneous floating equipment. Cranes:	15,000.00 20,818.00 19,838.10 2,112.00 30,076.85 43,538.77 28,690.30 2,550.00	906, 212. 71
Ajax. Hercules.  Total, floating cranes. Miscellaneous floating equipment: Drill barge Teredo, No. 2. Compresser barge No. 27. Detrick barge No. 161. Coal hoist No. 168 Un vatering barge No. 169. Grader No. 1. Grader No. 3. Crane boat La Valle Floating pile driver Bruiser  Total, miscellaneous floating equipment. Cranes: No. 1. US. 23.	15,000.00 20,818.00 19,838.10 2,112.00 30,076.85 43,538.77 28,690.30 2,550.00	906, 212. 71
Ajax. Herculcs.  Total, floating cranes. Miscellaneous floating equipment: Drill barge Teredo, No. 2. Compresser barge No. 27 Derrick barge No. 161. Coal hoist No. 168. Un watering barge No. 169. Grader No. 1. Grader No. 3. Crane boat La Valle Floating pile driver Bruiser  Total, miscellaneous floating equipment. Cranes: No. 1. US. 23.	15,000.00 20,818.00 30,076.85 43,538.77 2,112.00 30,076.85 43,538.77 28,690.30 2,550.00	906, 212. 71
Ajax. Herculcs.  Total, floating cranes. Miscellaneous floating equipment: Drill barge Teredo, No. 2. Compresser barge No. 27 Derrick barge No. 161. Coal hoist No. 168. Un watering barge No. 169. Grader No. 1. Grader No. 3. Crane boat La Valle Floating pile driver Bruiser  Total, miscellaneous floating equipment. Cranes: No. 1. US. 23.	448, 335. 79 457, 876. 92 15, 000. 00 20, 848. 00 19, 838. 10 2, 112. 00 30, 076. 85 43, 538. 77 28, 690. 30 19, 503. 00 2, 550. 00 400. 00 2, 000. 00 2, 000. 00 2, 000. 00	906, 212. 71
Ajax Hercules.  Total, floating cranes.  Miscellaneous floating equipment: Drill barge Teredo, No. 2. Compresser barge No. 27 Derrick barge No. 161. Coal hoist No. 168. Un watering barge No. 169. Grader No. 1. Grader No. 3. Crane boat La Valle Floating pile driver Bruiser  Total, miscellaneous floating equipment. Cranes: No. 1. US. 23. 24. 25. 27. 28.	448, 335. 79 457, 876. 92 15, 000. 00 20, 848. 00 19, 838. 10 2, 112. 00 30, 076. 85 43, 538. 77 28, 690. 30 2, 550. 00 2, 550. 00 400. 00 2, 000. 00 2, 000. 00 4, 000. 00 4, 000. 00 4, 000. 00	906, 212. 71
Ajax Hercules.  Total, floating cranes.  Miscellaneous floating equipment: Drill barge Teredo, No. 2. Compresser barge No. 27. Derrick barge No. 161. Coal hoist No. 168. Un watering barge No. 169. Grader No. 3. Crane boat La Valle. Floating pile driver Bruiser  Total, miscellaneous floating equipment Cranes: No. 1. US. 23. 24 25. 27. 28. 32	448, 335. 79 457, 876. 92 15, 000. 00 20, 818. 00 19, 838. 10 2, 112. 00 30, 076. 85 43, 538. 77 28, 690. 30 19, 503. 00 2, 550. 00 400. 00 2, 000. 00 2, 000. 00 4, 000. 00 4, 000. 00 8, 000. 00	906, 212. 71
Ajax Hercules.  Total, floating cranes.  Miscellaneous floating equipment: Drill barge Teredo, No. 2. Compresser barge No. 27. Derrick barge No. 161. Coal hoist No. 168. Un watering barge No. 169. Grader No. 3. Crane boat La Valle. Floating pile driver Bruiser  Total, miscellaneous floating equipment Cranes: No. 1. US. 23. 24 25. 27. 28. 32	448, 335. 79 457, 876. 92 15,000.00 20, 848.00 30,076. 85 43,538. 77 28,690. 30 2,550.00 400.00 2,000.00 2,000.00 4,000.00 4,000.00 4,000.00 8,000.00 5,000.00	906, 212. 71
Ajax Hercules.  Total, floating cranes.  Miscellaneous floating equipment: Drill barge Teredo, No. 2. Compresser barge No. 161. Coal hoist No. 168. Un watering barge No. 169. Grader No. 1. Grader No. 3. Crane boat La Valle. Floating pile driver Bruiser  Total, miscellaneous floating equipment  Cranes: No. 1. US. 23. 24. 25. 27. 28. 32. 31. 35. 36.	448, 335. 79 457, 876. 92 15,000.00 20,848.00 30,076.85 43,538.77 28,690.30 2,550.00 400.00 2,000.00 2,000.00 4,000.00 4,000.00 4,000.00 5,000.00 5,000.00 5,000.00	906, 212. 71
Ajax Hercules.  Total, floating cranes  Miscellaneous floating equipment: Drill barge Teredo, No. 2. Compresser barge No. 27 Detrick barge No. 161 Coal hoist No. 168 Un watering barge No. 169. Grader No. 1. Grader No. 3. Crane boat La Valle Floating pile driver Bruiser  Total, miscellaneous floating equipment.  Cranes: No. 1. US. 23. 24. 25. 27. 28. 32. 34. 35. 36. 36.	448, 335. 79 457, 876. 92 15, 000. 00 20, 848. 00 19, 838. 10 2, 112. 00 30, 076. 85 43, 538. 77 28, 690. 30 2, 550. 00 2, 000. 00 2, 000. 00 2, 000. 00 4, 000. 00 4, 000. 00 5, 000. 00 5, 000. 00 5, 000. 00 5, 000. 00	906, 212. 71
Ajax Hercules.  Total, floating cranes  Miscellaneous floating equipment: Drill barge Teredo, No. 2. Compresser barge No. 27 Detrick barge No. 161 Coal hoist No. 168 Un watering barge No. 169. Grader No. 1. Grader No. 3. Crane boat La Valle Floating pile driver Bruiser  Total, miscellaneous floating equipment.  Cranes: No. 1. US. 23. 24. 25. 27. 28. 32. 34. 35. 36. 36.	448, 335. 79 457, 876. 92 15, 000. 00 20, 848. 00 19, 838. 10 2, 112. 00 30, 076. 85 43, 538. 77 28, 690. 30 2, 550. 00 2, 000. 00 2, 000. 00 2, 000. 00 4, 000. 00 4, 000. 00 5, 000. 00 5, 000. 00 5, 000. 00 5, 000. 00	906, 212. 71
Ajax Hercules.  Total, floating eranes.  Miscellaneous floating equipment: Drill barge Teredo, No. 2. Compresser barge No. 27. Detrick barge No. 161 Coal hoist No. 168 Un watering barge No. 169. Grader No. 1. Grader No. 3. Crane boat La Valle Floating pile driver Bruiser  Total, miscellaneous floating equipment  Cranes: No. 1. US. 23. 24. 25. 27. 28. 32. 34. 35. 36. 37. 42. 43. 50.	448, 335. 79 457, 876. 92 15,000.00 20,818.00 19,838.10 2,112.00 30,076.85 43,538.77 22,690.30 2,550.00 2,000.00 2,000.00 2,000.00 4,000.00 4,000.00 6,000.00 5,000.00 5,000.00 5,000.00 3,300.00 3,300.00 3,000.00	906, 212. 71
Ajax Hercules.  Total, floating eranes.  Miscellaneous floating equipment: Drill barge Teredo, No. 2. Compresser barge No. 27. Detrick barge No. 161 Coal hoist No. 168 Un watering barge No. 169. Grader No. 1. Grader No. 3. Crane boat La Valle Floating pile driver Bruiser  Total, miscellaneous floating equipment  Cranes: No. 1. US. 23. 24. 25. 27. 28. 32. 34. 35. 36. 37. 42. 43. 50.	448, 335. 79 457, 876. 92 15,000.00 20,818.00 19,838.10 2,112.00 30,076.85 43,538.77 22,690.30 2,550.00 2,000.00 2,000.00 2,000.00 4,000.00 4,000.00 6,000.00 5,000.00 5,000.00 5,000.00 3,300.00 3,300.00 3,000.00	906, 212. 71
Ajax Hercules.  Total, floating cranes  Miscellaneous floating equipment: Drill barge Teredo, No. 2. Compresser barge No. 27 Detrick barge No. 161 Coal hoist No. 168 Un watering barge No. 169. Grader No. 3. Crane boat La Valle Floating pile driver Bruiser  Total, miscellaneous floating equipment.  Cranes: No. 1. US. 23	448, 335. 79 457, 876. 92 15,000.00 20,818.00 19,838.10 2,112.00 30,076.85 43,538.77 22,690.30 2,550.00 2,000.00 2,000.00 2,000.00 4,000.00 4,000.00 6,000.00 5,000.00 5,000.00 5,000.00 3,300.00 3,300.00 3,000.00	906, 212. 71
Ajax Hercules.  Total, floating cranes  Miscellaneous floating equipment: Drill barge Teredo, No. 2. Compresser barge No. 27 Detrick barge No. 161 Coal hoist No. 168 Un watering barge No. 169. Grader No. 1. Grader No. 1. Grader No. 1. Crane boat La Valle Floating pile driver Bruiser  Total, miscellaneous floating equipment.  Cranes: No. 1 US. 23 24 25 27 28 32 34 35 36 37 42 43 50 51 53 55 56	448, 335. 79 457, 876. 92 15, 000. 00 20, 848. 00 19, 838. 10 2, 112. 00 30, 076. 85 43, 538. 77 28, 690. 30 2, 550. 00 2, 000. 00 2, 000. 00 2, 000. 00 4, 000. 00 4, 000. 00 5, 000. 00 5, 000. 00 5, 000. 00 5, 000. 00 3, 300. 00 3, 300. 00 3, 300. 00 4, 500. 00 4, 500. 00 4, 500. 00 4, 500. 00 4, 500. 00 4, 500. 00	906, 212. 71
Ajax Hercules.  Total, floating eranes.  Miscellaneous floating equipment:  Drill barge Teredo, No. 2.  Compresser barge No. 27.  Detrick barge No. 161.  Coal hoist No. 168  Un watering barge No. 169.  Grader No. 1.  Grader No. 3.  Crane boat La Valle  Floating pile driver Bruiser  Total, miscellaneous floating equipment  Cranes: No. 1.  US. 23.  24.  25.  27.  28.  32.  34.  35.  36.  37.  42.  43.  50.  51.  53.  55.  56.  61.	448, 335. 79 457, 876. 92 15, 000. 00 20, 848. 00 19, 838. 10 2, 112. 00 30, 076. 85 43, 538. 77 28, 690. 30 2, 550. 00 2, 000. 00 2, 000. 00 2, 000. 00 4, 000. 00 4, 000. 00 5, 000. 00 5, 000. 00 5, 000. 00 5, 000. 00 3, 300. 00 3, 300. 00 3, 300. 00 4, 500. 00 4, 500. 00 4, 500. 00 4, 500. 00 4, 500. 00 4, 500. 00	906, 212. 71
Ajax Hercules.  Total, floating cranes  Miscellaneous floating equipment: Drill barge Teredo, No. 2. Compresser barge No. 27 Detrick barge No. 161 Coal hoist No. 168 Un watering barge No. 169. Grader No. 1. Grader No. 1. Grader No. 1. Crane boat La Valle Floating pile driver Bruiser  Total, miscellaneous floating equipment.  Cranes: No. 1 US. 23 24 25 27 28 32 34 35 36 37 42 43 50 51 53 55 56	448, 335. 79 457, 876. 92 15, 000. 00 20, 848. 00 30, 076. 85 43, 538. 77 28, 690. 30 2, 550. 00 2, 000. 00 2, 000. 00 4, 000. 20 4, 000. 00 4, 000. 00 5, 000. 00 5, 000. 00 5, 000. 00 5, 000. 00 6, 658. 00 3, 300. 00 3, 300. 00 3, 300. 00 3, 300. 00 3, 300. 00 3, 300. 00 4, 500. 00 4, 668. 80 4, 600. 60 6, 668. 00 3, 300. 00 3, 300. 00 3, 300. 00 3, 300. 00 4, 500. 00 4, 500. 00 4, 500. 00 4, 500. 00 5, 500. 00 6, 658. 00 6, 658. 00 6, 600. 0	906, 212. 71

Table No. 18.—Statement of equipment, material, and supplies paid from construction funds (bond issue) but not directly charged to Canal construction accounts—Continued.

Cranes-Continued,			
U. S. 63	\$4,550.00 8,000.00 3,550.00		
64	3,550,00		
67	3,500.00 5,500.00 5,700.00 6,800.00		
68 69	5,500.00		
70	6,800.00		
71	0,870.00		
72 73	6,400.00 6,400.00		
75	6,900.00		
76 77	6,900.00		
78	6,900.00 6,900.00		
79	6 900 00		
80. 81.	6,900.00		
82	6,900.00 6,900.00		
83	4,000.00		
84	4,822.00		
Total, cranes	•••••	\$204,440.30	
Motor cars:			
No. 1	5,000.00 1,500.00 2,000.00		
7	2,000.00		
Total, motor cars		8,500.00	
Road rollers:	• • • • • • • • • • • • • • • • • • • •	8,300.00	
No. 2	2,236.00		
34	2,750.00		
6	2,236.00 2,750.00 2,500.00 3,000.00		
7	2,875.00 2,595.00 3,0°5.00 2,750.00 3,0°5.00		
8 9.	2,595.00		
10	2,750.00		
11 12	3,005.00		
12	3,025.00		
Total, road rollers		27,781.00	
Miscellaneous equipment: Pay car No. 1	1,289.75		
I ay car no. I	1.209.70		
Locomotive 401	400.00		
Locomotive 401 403	400.00 400.00		
Locomotive 401 403 467 Pile driver 102	400.00 400.00 400.00		
Locomotive 401. 403. 467. Pile driver 102.	400.00 400.00 400.00 4,800.00		
Locomotive 401	400.00 400.00 400.00 4,800.00	7,289.75	
Locomotive 401. 403. 467. Pile driver 102.  Total, miscellaneous equipment.	400.00 400.00 400.00 4,800.00		\$5.733.851.31
Locomotive 401. 403. 467. Pile driver 102.	400.00 400.00 400.00 4,800.00		\$5,733,851.31 59,922.0 <b>8</b>
Locomotive 401	400.00 400.00 400.00 4,800.00		
Locomotive 401. 403. 467. Pile driver 102.  Total, miscellaneous equipment.  Total.  Tug Reliance (lost at sea Aug. 2, 1918).  Total.	400.00 400.00 400.00 4,800.00		\$5,733,851.31 59,922.0 <b>8</b> 7,943,633.49
Locomotive 401	400.00 400.00 400.00 4,800.00		
Locomotive 401	400.00 400.00 400.00 4,800.00		
Locomotive 401. 403. 467. Pile driver 102.  Total, miscellaneous equipment.  Total.  Tug Reliance (lost at sea Aug. 2, 1918).  Total.	400.00 400.00 400.00 4,800.00		7,943,633.49
Locomotive 401. 403. 467. Pile driver 102.  Total, miscellaneous equipment.  Total.  Tug Reliance (lost at sea Aug. 2, 1918).  Total.  Statement of construction equipment transferred to the Panama R: Floating equipment— Steamship Panama. Steamship Colon.	400.00 400.00 400.00 4,800.00	400,000.00	
Locomotive 401 403 467 Pile driver 102.  Total, miscellaneous equipment.  Total.  Tug Retiance (lost at sea Aug. 2, 1918).  Total.  Statement of construction equipment transferred to the Panama Refloating equipment— Steamship Panama. Steamship Colon  Dredge Caribbean.	400.00 400.00 400.00 4,800.00	400,000.00	7,943,633.49
Locomotive 401. 403. 467. Pile driver 102.  Total, miscellaneous equipment.  Total.  Total.  Statement of construction equipment transferred to the Panama Raf Floating equipment.  Steamship Panama. Steamship Panama. Steamship Colon.  Dredge Caribbean. Dredge Culebra.	400.00 400.00 400.00 4,800.00		7,943,633.49
Locomotive 401. 403. 467. Pile driver 102.  Total, miscellaneous equipment.  Total.  Tug Reliance (lost at sea Aug. 2, 1918).  Total.  Statement of construction equipment transferred to the Panama Refloating equipment— Steamship Panama Steamship Colon.  Dredge Caribbean. Dredge Culebra  Launches—	400.00 400.00 400.00 4,800.00	400,000.00 400,000.00 157,304.60 109,325.00	7,943,633.49 800,000.00
Locomotive 401. 403. 467. Pile driver 102.  Total, miscellaneous equipment.  Total.  Tug Reliance (lost at sea Aug. 2, 1918).  Total.  Statement of construction equipment transferred to the Panama Refloating equipment— Steamship Panama Steamship Colon  Dredge Caribbean Dredge Caribbean Dredge Culebra  Launches— Ancon Taboguilla	400.00 400.00 400.00 4,800.00	400,000.00 400,000.00 157,304.60 109,325.00	7,943,633.49 800,000.00
Locomotive 401. 403. 467. Pile driver 102.  Total, miscellaneous equipment.  Total.  Tug Reliance (lost at sea Aug. 2, 1918).  Total.  Statement of construction equipment transferred to the Panama Refloating equipment— Steamship Panama Steamship Colon  Dredge Caribbean Dredge Caribbean Dredge Culebra  Launches— Ancon Taboguilla	400.00 400.00 400.00 4,800.00	400,000.00 400,000.00 157,304.60 109,325.00 678.31 2,284.72 2,920.13	7,943,633.49 800,000.00
Locomotive 401. 403. 467. Pile driver 102.  Total, miscellaneous equipment.  Total.  Total.  Total.  Statement of construction equipment transferred to the Panama R: Floating equipment— Steamship Panama Steamship Panama Steamship Colon.  Dredge Caribbean Dredge Culebra  Launches— Ancon	400.00 400.00 400.00 4,800.00	400,000.00 400,000.00 157,304.60 109,325.00	800,000.00 266,629.60
Locomotive 401. 403. 467. Pile driver 102.  Total, miscellaneous equipment.  Total.  Total.  Total.  Statement of construction equipment transferred to the Panama R: Floating equipment— Steamship Panama Steamship Panama Steamship Colon.  Dredge Caribbean Dredge Culebra  Launches— Ancon Taboguilla Vidette. No. 1355  Barges—	400.00 400.00 400.00 4,800.00	400,000.00 400,000.00 157,304.60 109,325.00 678.31 2,284.72 2,920.13 2,476.05	7,943,633.49 800,000.00
Locomotive 401. 403. 467. Pile driver 102.  Total, miscellaneous equipment.  Total.  Tug Reliance (lost at sea Aug. 2, 1918).  Total.  Statement of construction equipment transferred to the Panama Rifloating equipment— Steamship Panama Steamship Panama Steamship Colon  Dredge Caribbean Dredge Caribbean Dredge Culebra  Launches— Ancon Taboguilla Vidette. No. 1355  Barges— No. 1	400.00 400.00 400.00 4,800.00	400,000.00 400,000.00 157,304.60 109,325.00 678.31 2,284.72 2,920.13 2,476.05	800,000.00 266,629.60
Locomotive 401. 403. 467. Pile driver 102.  Total, miscellaneous equipment.  Total.  Total.  Total.  Statement of construction equipment transferred to the Panama R: Floating equipment— Steamship Panama Steamship Panama Steamship Colon.  Dredge Caribbean Dredge Culebra  Launches— Ancon Taboguilla Vidette. No. 1355  Barges—	400.00 400.00 400.00 4,800.00	400,000.00 400,000.00 157,304.60 109,325.00 678.31 2,284.72 2,920.13 2,476.05	800,000.00 266,629.60
Locomotive 401. 403. 467. Pile driver 102.  Total, miscellaneous equipment.  Total.  Total.  Total.  Statement of construction equipment transferred to the Panama R. Floating equipment— Steamship Panama. Steamship Colon.  Dredge Caribbean. Dredge Culcbra.  Launches— Ancon. Taboguilla. Vidette. No. 1355.  Barges— No. 1. 2 4 15.	400.00 400.00 400.00 4,800.00	400,000.00 400,000.00 157,304.60 109,325.00 678.31 2,284.72 2,920.13 2,476.05	800,000.00 266,629.60
Locomotive 401. 403. 467. Pile driver 102.  Total, miscellaneous equipment.  Total.  Total.  Total.  Statement of construction equipment transferred to the Panama R: Floating equipment— Steamship Panama. Steamship Panama. Steamship Colon.  Dredge Caribbean. Dredge Culebra  Launches— Ancon. Taboguilla. Vidette. No. 1355.  Barges— No. 1.  2. 4. 18. 19.	400.00 400.00 400.00 4,800.00	400,000.00 400,000.00 157,304.60 109,325.00 678.31 2,284.72 2,920.13 2,476.05	800,000.00 266,629.60
Locomotive 401. 403. 467. Pile driver 102.  Total, miscellaneous equipment.  Total.  Total.  Total.  Statement of construction equipment transferred to the Panama R: Floating equipment— Steamship Panama Steamship Panama Steamship Colon.  Dredge Caribbean. Dredge Caribbean Dredge Culcbra  Launches— Ancon. Taboguilla Vidette. No. 1355  Barges— No. 1.  2. 4. 13. 19. 26. 28.	400.00 400.00 400.00 4,800.00	400,000.00 400,000.00 157,304.60 109,325.00 678.31 2,284.72 2,920.13 2,476.05	800,000.00 266,629.60
Locomotive 401. 403. 467. Pile driver 102.  Total, miscellaneous equipment.  Total.  Total.  Total.  Statement of construction equipment transferred to the Panama R: Floating equipment— Steamship Panama Steamship Panama Steamship Colon.  Dredge Caribbean. Dredge Caribbean Dredge Culcbra  Launches— Ancon. Taboguilla Vidette. No. 1355  Barges— No. 1.  2. 4. 13. 19. 26. 28.	400.00 400.00 400.00 4,800.00	400,000.00 400,000.00 157,304.60 109,325.00 678.31 2,284.72 2,920.13 2,476.05	800,000.00 266,629.60
Locomotive 401. 403. 467. Pile driver 102.  Total, miscellaneous equipment.  Total.  Total.  Total.  Statement of construction equipment transferred to the Panama R. Floating equipment— Steamship Panama. Steamship Colon.  Dredge Caribbean. Dredge Culcbra.  Launches— Ancon. Taboguilla. Vidette. No. 1355.  Barges— No. 1. 2. 4. 13. 19. 26. 28. 29. 57.	400.00 400.00 400.00 4,800.00	400,000.00 400,000.00 157,304.60 109,325.00 678.31 2,284.72 2,920.13 2,476.05 10,000.00 9,047.25 11,177.90 11,065.00 11,171.31 16,8 8.51 5,587.00 11,994.50 200.00	800,000.00 266,629.60
Locomotive 401. 403. 467. Pile driver 102.  Total, miscellaneous equipment.  Total.  Total.  Total.  Statement of construction equipment transferred to the Panama R. Floating equipment— Steamship Panama. Steamship Panama. Steamship Colon.  Dredge Caribbean. Dredge Culcbra.  Launches— Ancon. Taboguilla. Vidette. No. 1355.  Barges— No. 1. 2 4 13. 19 26. 28 29 57 47 149	400.00 400.00 400.00 4,800.00	400,000.00 400,000.00 157,304.60 109,325.00 678.31 2,284.72 2,920.13 2,476.05 10,000.00 9,047.25 11,177.90 11,065.00 11,171.31 16,8 8.51 5,587.00 11,994.50 200.00	800,000.00 266,629.60
Locomotive 401. 403. 467. Pile driver 102.  Total, miscellaneous equipment.  Total.  Total.  Total.  Statement of construction equipment transferred to the Panama R. Floating equipment— Steamship Panama. Steamship Panama. Steamship Colon.  Dredge Caribbean. Dredge Culcbra.  Launches— Ancon. Taboguilla. Vidette. No. 1355.  Barges— No. 1. 2 4 13. 19 26. 28 29 57 47 149	400.00 400.00 400.00 4,800.00	400,000.00 400,000.00 157,304.60 109,325.00 678.31 2,284.72 2,920.13 2,476.05 10,000.00 9,047.25 11,177.90 11,065.00 11,171.31 16,8 8.51 5,587.00 11,994.50 200.00	800,000.00 266,629.60
Locomotive 401. 403. 467. Pile driver 102.  Total, miscellaneous equipment.  Total.  Total.  Total.  Statement of construction equipment transferred to the Panama R: Floating equipment— Steamship Panama Steamship Panama Steamship Panama Dredge Caribbean Dredge Caribbean Dredge Culebra  Launches— Ancon Taboguilla Vidette. No. 1355  Barges— No. 1  2  4  15  19  26  28  29  57  47	400.00 400.00 400.00 4,800.00	400,000.00 400,000.00 157,304.60 109,325.00 678.31 2,284.72 2,90.13 2,476.05 11,177.90 11,065.00 11,171.31 16,8.8.51 5,587.00 11,994.50	800,000.00 266,629.60

Table No. 18.—Statement of equipment, material, and supplies paid from construction funds (bond issue) but not directly charged to Canal construction accounts—Continued.

Statement of construction equipment transferred to the Panama Railroad— Continued. Rolling stock— 43 locomotives. 49 l steel flat cars. 450 Oliver dump cars. 194 Lidgerwood flat cars.	\$309, 468. 85 257, 934. 62 225, 332. 90 85, 307. 22	\$878, 043, 59
Other equipment—  2 cranes (Nos. 26 and 40).  2 plows (Nos. 27 and 28).  2 track shifters (Nos. 5 and 7).  3 spreaders (Nos. 36, 37, 39).  5 steam shovels (Nos. 56, 121, 203, 204, 213).  3 unloaders (Nos. 26, 32, 36).  Miscellaneous equipment.	8,785.01 400.00 1,872.00 6,600.00 17,316.90 6,000.00 9,737.82	50,711.73
Total, transferred to Panama Railroad		2, 128, 198. 18
Statement of construction equipment transferred to the Alaskan Engineering Commission:  24 locomotives  7 narrow-gauge locomotives  35 Oliver dump cars.  70 Western dump cars.  408 Lidgerwood flat cars  2 pile drivers (Nos. 2 and 5)  1 spreader (No. 43)  3 steam shovels (Nos. 54, 111, 130).  2 unloaders (Nos. 29 and 38).  Miscellaneous	95, 138.88 6, 9°5.00 4, 550.00 8, 400.00 150, 960.00 1, 646.95 2, 200.00 5, 900.00 2, 400.00 59, 791.38	
Total, transferred to Alaska		337,912.21

Table No. 19.—Detailed cost, Pier No. 6, Cristobal, to June 30, 1920.

			-
	Quantity.	Amount.	Unit cost.
Surveys		\$17, 196, 20	
Designing		32, 841, 98	
Testing.		1,448.37	
Preliminary horings linear feet	2 924 6	1,514.78	\$0,5179
Preliminary borings. linear feet Final borings	6,603	2,496,69	.3781
Preparing site	0,000	10, 424, 48	.0101
Cleaning around site		501. 75	
Preliminary work		49,425.58	
Dredging.		4,627.99	
Dreaging		198.26	
Maintenance range lights.  Caisson, 6 feet diameter. linear feet	90 610	335, 291, 67	14, 8294
Caisson, 6 feet diameter	22,610 14,117.01 22,005.8		6,1369
Excavation inside caissons	14,117.01	86,634.51	
Concrete in caissonsdo	190	122, 013. 84	5. 5446 7. 0470
Pedcstalseach		1,338.93	
Bumping posts			
Column anchor bolts		2,946.14	
Mooring bitts		4,270.77	
Silver toilets		540.71	
Winch motor anchors		1,018.42	
Fender system		37, 961. 05	
Arches and large girders, concrete floor system:			
Placing formssquare feet	206,058	96, 289, 93	. 46730
Placing reinforcing pounds.	3,417,640	147, 567. 56	.04318
Placing concrete	1,429,880	95, 957. 30	.06710
Strutspounds	1,565,795	123, 957. 52	. 07917
Floor beams:			
Placing formssquare feet	232,820	50, 306, 06	. 21610
Placing reinforcingpounds	1,910,440	93, 834, 73	. 04912
Placing concrete	6,609.4	63,992.16	9,6820
Slab—Concrete floor system:			
Placing formssquare feet	134,413	25, 330. 19	.18850
Placing reinforcingpounds	600,640	39, 735, 97	. 06616
Placing concretecubic yards	6,953.8	67, 935. 71	9.76960
Apron tracks		16,416.17	
Temporary water lines		557, 09	
Temporary power lines		481.77	
Drains		1,297,81	
Electrical work in floor		29, 176, 18	
Handling miscellaneous material account, floor system		10.00	
Reinforced concrete shed (columns except In end wall):			
Placing formssquare feet	42,580	8,690.57	. 2041
Placing reinforcing pounds	107,600	7,344.34	. 0683
Placing concretecubic yards		10, 132, 79	13, 2628-

Table No. 19.—Detailed cost, Pier No. 6, Cristobal, to June 30, 1920—Continued.

	Quantity.	Amount.	Unit cost.
Trusses:			
Placing formssquare feet	103,640	\$13,917,96	\$0,1343
Placing reinforcingpounds	971,795	45,831.02	. 04716
Placing concrete	1,852	20,607.89	11.1274
Erection of trusses		7,500.13	
Concrete—Side walls (girders and pilasters):		1	
Placing formssquare feet	80,078	27,501.38	.3434
Placing reinforcing pounds.	240,175	13,617.64	.0567
Placing concrete	1,502	25, 263, 24	16.8197
Concrete—end walls:	′	•	
· Placing forms	23,276	7,987.77	. 3432
Placing reinforcingpounds	43, 420	3,596.90	. 0828
Placing concrete	298	4, 156, 47	13.9479
Scaffolding		646, 57	
Roofs:			
Placing formssquare feet	123,372	18,561.24	.1504
Placing reinforcingpounds		9,888.21	.0603
Placing concretecubic yards	1,623	25, 271, 10	15.5706
Barrett specification roofing	.,	21,576.08	
Brick payment:		′	
Brick		1,320,44	
Steel doors:		· ·	
Fnd doors		2,486.90	
Side doors		49, 421. 04	
Miscellaneous:	- 1	· ·	
Windows and louvers.		6,968.33	,
Skylights		1,093.03	
Telephone and transformer booths		1,569.31	
Gold toilets		2,357.76	
Wheel guards		11,345.07	
Overhead cranes.		3,810.77	
Crane tracks		7, 137. 51	
Trolleys for cranes		398.74	
Electrical work for lighting system		831.34	
Plant credits		(1, 134.30)	
Total, division cost, Pier No. 6		1 925 545 01	

Table No. 20.—Detail of buildings, fiscal year 1920, and to June 30, 1920.

[Amounts include Canal overhead.]

	Fiscal year 1920 .	Total to June 30, 1920.
Anemometer tower, Balboa Heights		\$1,987.45
Asylums:		105,160,40
Corozal asylum buildings Tuberculosis ward, Corozal	13,481.48	35, 915, 82
Chicken house, Corozal	15,451.45	1 884.55
Compost pit, Corozal		1,884.55 784.05
Dairy builtings Corozal	1	14, 104, 06
Dairy she I, Corozal		26,487,23
Guinea piz house, Corozal		342.97
Dairy she I, Corozal Guinea piz house, Corozal. Gold quarters, Corozal Hors she'ls, Corozal Nurses' quarters, Corozal.	1 1,227.28	2,443.12 14,865.68
Nurses' quarters Corogal	2 901 65	2,901.65
Palo Seco buildings	2,501.05	46,833.90
Total, asylums	15, 413, 44	251,723.43
Band stands:		
Cristobal		471, 25
Gatun		
Paraiso		640.25
Total, ban'l stands		1,486.50
Boathouse, Gatun	35.91	9,361.20
Boy Scouts, Paraiso. Cemetery, Corozal.		2,010.14
Obmetery, Corozai		2,010.14
Churches:		
Ancon—Episcopal	975.00	975.00
Ancon—Catholic	1,100.00	1,100.00
Cristobal—Union	• • • • • • • • • • • • • • • • • • • •	1,275.00
Total, churches.	2,075.00	3,350.00
1 Others Carlotte Control of the Con	2,010.00	0,000.00
	1	,

Table No. 20.—Detail of buildings, fiscal year 1920, and to June 30, 1920—Continued.

	Fiscal year 1920.	Total to Ju 30, 1920.
lubhouses:		
Balboa, main building		\$22,042. 16,120. 19,250. 15,750. 11,345. 8,256. 18,522. 25,025. 11,538. 4,800.
Balboa, motion-pleture hall.	\$14, 452, 52	16, 120.
Cristobal		19, 250.
Gatun. Gatun, silver employees' La Boca, silver employees' Paraiso	2 714 00	15,750.
La Roca silvar amployaes'	3,714.00	11,340.
Paraiso.		18, 522.
Petro Miguel Red Tank, silver employees' Ancon (includes lodge hall)		25, 025.
Red Tank, silver employees'		11,538.
Ancon (includes lodge hall)		4,800.
Total, clubhouses	18, 166, 52	152,651.
forral buildings:		
Ancon		18,000.
Gatun		3,115.
Paraiso		3,115. 200.
Pedro Miguel		2,433. 21,256.
Cristobal	2,491.46	21, 256.
Total, corral buildings	2,491,46	45, 005.
ourthouses, fire and police stations:		=====
Courthouses, Cristobal		18,900.
Fire stations—		20,000.
Ancon		4,398.
Balboa, concrete		20,655.
Mount Hope, Cristobal.	10.050.10	680.
Cristobal	12,650.13	12,650. 2,030.
La Boca		318.
Paraiso.		520.
Paraiso. Pedro Miguel.		2,033.
Total, fire stations	12,650,13	43, 286.
Police stations— Ancon		4 620
Balboa		4, 620. 12, 725. 6, 820. 760.
Cristobal		6,820.
Gamboa		760.
Gatun New Gatun		4,200.
New Gatun	•••••	520. 195.
Paraiso Pedro Miguel		9,900.
Total, police stations		39,740.
Total, courthouses, fire and police stations	12,650.13	101, 927.
ispensaries:	Į	00.050
Ancon, concrete.  Balboa, concrete.		62, 856. 19, 038.
Gatun concrete	(	38, 650.
Pedro Miguel, concrete.		40,668.
Pedro Miguel, concrete. Garage, Pedro Miguel dispensary.	545. 72	545.
Total, dispensaries	545. 72	161,759.
ıel shed, district quartermaster, Balboa Heights		3,778.
arages:		
Motor truck, Ancon corral Ancon-Balboa-Balboa Heights district		21,442.
Ancon-Balboa-Balboa Heights district	15,611.91	57, 221.
Railroad motor cars, Balbca Heights	4 550 07	13, 011.
	4,553.37 $2,573.20$	13,541.
Cristobal-Colon district	414. 57	9, 489. 10, 069.
Cristobal-Colon district. Gatum. Pedro Miguel district.		124,776.
Gatun Pedro Miguel district.		
Gatun Pedro Miguel district.  Total, garages.	23, 153. 05	121, 110.
Gatun Pedro Miguel district.  Total, garages.  ospital. Aucon:	23, 153. 05	
Gatun Pedro Miguel district.  Total, garages.  ospital, Aucon: Administration building, concrete.	23, 153. 05	192, 611.
Gatun Pedro Miguel district.  Total, garages.  ospital, Aucon: Administration building, concrete. Bakesbap and storeroom, concrete.	23, 153, 05	192, 611.
Gatun Pedro Miguel district.  Total, garages.  ospital, Ancon: Administration building, concrete. Bakeshop and storeroom, concrete. Boiler house, concrete.	23, 153. 05	192, 611. 11, 591. 17, 630.
Gatun Pedro Miguel district.  Total, garages.  ospital, Ancon: Administration building, concrete. Bakeshop and storeroom, concrete. Boiler house, concrete.	23, 153. 05	192, 611. 11, 591. 17, 630. 11, 857. 6, 817.
Gatun Pedro Miguel district.  Total, garages.  ospital, Ancon: Administration building, concrete. Bakeshop and storeroom, concrete. Boiler louse, concrete	23, 153. 05	192, 611. 11, 591. 17, 630.

Table No. 20.—Detail of buildings, fiscal year 1920, and to June 30, 1920—Continued.

	Fiscal year 1920.	Total to June 30, 1920.
T. V. 1		
Hospital, Ancon—Continued.  Main stairway, concrete		\$15,287.03
Nurses' quarters, concrete		143, 862.38 35, 003. 29 33, 339. 81 840, 265. 62
Superintendent's quarters, concrete	\$1,890.42	33, 339. 81
Main stairway, concrete.  Nurses' quariers, concrete.  Passageway, concrete.  Superinten'ent's quarters, concrete.  Wards, sections A, B, C, and D, concrete.	3,839.99	
Total, hospital, Ancon.	17, 321, 73	1,695,220.06
Hospital, Colon: Garage.	6,861.36	6,861.36
Morgue, concrete		5, 107. 20
Morgue, concrete Nurses' quarters, concrete. Wards, concrete.		5, 107. 20 38, 277. 94 205, 260. 40
Total, hospital, Colon	6,861.36	255, 506, 90
Hotels and mess halls:		
Tivoli vitchen, concrete, Ancon		56, 146, 01
Linen room, Tivo'i hotel, frame, Ancon		1,329.99
Restaurant, concrete, Ancon		79,887.38
Hotel, frame, Balboa.		56, 146, 01 180, 300, 00 1, 329, 99 79, 887, 38 80, 771, 75 8, 100, 00 86, 517, 21 7, 084, 04
Mess hall and kitchen, frame, Camp Bierd, Cristobal.		7,084.04
Laborers' kitchen, frame, Camp Blerd, Cristobal		1, 140. 00
Hotels and mess halls:  Tivo'l kitchen, concrete, Ancon Tivo'l hotel, frame, Ancon Linen room, Tivo'i hotel, frame, Ancon Restaurant, concrete, Ancon Restaurant, concrete, Ba'boa. Hotel, frame, Balboa. Restaurant, concrete, Cristobal. Mess hall and kitchen, frame, Camp Bierd, Cristobal. Laborers' kitchen, frame, Camp Blerd, Cristobal. Cook shed, Fast Indian, frame, Camp Bierd, Cristobal Mess hall, frame, Gatun Kitchens, laborers', frame, Gatun Kitchen, laborers', frame, La Boca. Kitchen, Europeanlaborers', frame, Paraiso. Restaurant, concrete, Pedro Miguel Aspinwall Hotel, frame, Taboga Landing stage, Aspinwall Hotel.  Total, hotels and mess halls		121.50 6,463.81
Kitchens, laborers', frame, Gatun.		6, 463, 81 1, 200, 00
Kitchen, European laborers', frame, Paraiso		8,514.10 357.50
Restaurant, concrete, Pedro Miguel	2,469.87	38,334.51 6,583.50
Landing stage, Aspinwall Hotel.		4,800.57
Total, hotels and mess halls	2,469.87	567, 651. 87
Incinerators:		100 100 00
Balboa Cristobal	49, 788, 43 121, 080, 87	180, 106, 23 121, 080, 87
Total, incinerators	170, 869. 30	301, 187. 10
Larvacide plant, Ancon Lighthouse building, Gatun.		14,700.65 22,619.03
	10, 890. 14	22,619.03
Lodge halls: Ba'boa.		1, 800, 00
Gatun		1,800.00 7,000.00
Gatun. Gatun, silver employees'. La Bora, silver employees'.	2,025.55	4, 400. 22 1, 776. 92 17, 636. 16
redro Migdel	5, 520, 00	
Total, lodge halls	7,345.55	32,613.30
Marine division dock building, Gatun		207.81
Cristobal		1,382.50
Gatun		1,330.00
Total, markets		3,372.50
Meter-reading station, Pedro Mignel.	==	62.35
()those:	1	130 802 30
Administration Building, Santa Rosa, Ancon Municipal engineering division, Ancon Shops, Balboa		1, 177. 04
Shops, Balboa Terminal, Balboa		238, 553, 94 80, 634, 42
Sanitary inspector and dentist, Balboa.		130, 892. 39 1, 177. 04 238, 553. 94 80, 634. 42 28, 248. 56 1, 224, 847. 51
District quartermaster, Balboa Heights		1,224,847.51 19,166.24 300.00
Customs, Cristobal		300.00
Depot quartermaster, Cristobal		5, 850. 00- 3, 010. 00- 796. 96
Municipal building, Cristobal  Municipal engineering and electrical divisions. Cristobal	178, 33	796. 96 4, 517, 50
Sanitary inspector, Culebra.		4,517.50 1,800.00
Dredging division, Paraiso.		1,500.00 480.00
Sanitary inspector, Paraiso		390.00 342.72
Shops, Balboa. Terminal, Balboa. Sanitary inspector and dentist, Ba'boa. Administration building, Ba boa Heights. District quartermaster, Balboa Heights. Customs, Cristobal. Depot Commissary, Cristobal. Depot quartermaster, Cristobal. Municipal bui'ding, Cristobal. Municipal bui'ding, Cristobal. Municipal bui'ding, Cristobal. Sanitary inspector, Culebra. Sanitary inspector, Culebra. Sanitary inspector, Paraiso. Dredging di vision, Paraiso. Sanitary inspector, Paraiso. District quartermaster, Pedro Miguel. Hydrographer, Pedro Miguel. Total, offices	297.50	342.72 297.50
Total, offices	475.83	1,742,804.78

 ${\tt Table\ No.\ 20.--} Detail\ of\ buildings, fiscal\ year\ 1920, and\ to\ June\ 30,\ 1920--- Continued.$ 

	Fiscal year 1920.	Total to Jun 30, 1930.
Post offices, frame:		
Angon		\$4,560.0
Palhos		9,900.0
Corozal	1	1,592.6
Cristobal		1,592.6 7,930.0
Culabra	1	5,700.0
Gatun		5,700.0 4,200.0
Gatun Pedro Miguel		2, 100.0
Total, post offices, frame		35, 982. 6
Quarantine stations:		
Balboa		63,392.7 16,048.5 817.2
Colon		16,048.5
Kitchen, Colon quarantine station	\$817.20	817.2
Total, quarantine stations	817. 20	80, 258. 4
Two-family concrete		200, 312, 3
Quarters, gold: Two-family, concrete Four-family, concrete	3.30	1 316 472.4
Bachelor, concrete		75, 819. (
Four-family, concrete. Bachelor, concrete. Frame	55, 303, 62	75, 819. 6 3, 163, 654.
Total, quarters, gold		4,756,258.6
		872,064.4
Quarters, silver, frame. Scales, track, Mount Hope, Cristobal.	39, 880. 81	1,750.0
scales, track, stourt froje, cristobar		
Schoolhouses:		04.045.4
Ancon, white, concrete		84,947.1
Ancon, white, frame		5,713.6
Balboa, manual training, frame		1,194.1 4,150.3
Balboa, white (lower floor of lodge hall)		2 213 (
Balboa, domestic science, irame		2,213. ( 179,768. 9
Cristobal white concrete		109, 595. 7
Empire colored frame		2,327.4
Gatun, white concrete		52, 643.
Paraiso, colored, frame		1,582.6
Pedro Miguel, white, concrete		51,592.9
Schoolhouses: Ancon, white, concrete. Ancon, white, frame Balboa, manual training, frame. Balboa, white (lower floor of lodge hall) Balboa, domestic science, frame. Balboa, white, concrete. Cristobal, white, concrete. Empire, colored, frame. Gatun, white, concrete. Paraiso, colored, frame. Pedro Miguel, white, concrete. Red Tank, colored, frame.		2,255.0
Total, schoolhouses		497, 984. 8 17, 505. 3
Shops:		1,275.0
District quartermaster, carpenter shop, Balboa.	1,275.00	423.
Electrical division, Balboa Marine division, Balboa Mechanical division, Balboa Pattern shop and mess hall, Balboa Pattern shop and mess hall, Balboa		122.
Machanical division Ralboa	11 801 92	3,982,292. 64,245.
Pattern shop and mess hall, Balboa	11,001.02	64, 245.
Mechanical division, Cristobal	43,444,79	206, 647.
District quartermaster, Gatun		3,300.
Electrical division, Gatun		637. 2,147.
Electrical division, shop and store, Gatun		1,050.
Municipal angineering division, plumbing about Catur		1,280.
Dradging division Paraisa		4,678
Mechanical division, Cristof al. District quartermaster, Gatun Electrical division, Gatun Electrical division, Shop and store, Gatun Marine division, Gatun Municipal engineering division, plumbing shop, Gatun Dredging division, Paraiso Mechanical division, Paraiso Barter, Pedro Minul		2, 728.1 180.
Barter, Pedro Miguel		180.
District quartermaster, carpenter shop, Pedro Miguel.		220.
District quartermaster, shop and store, Pedro Miguel		5, 472. 210.
Barler, Pedro Miguel District quartermaster, earpenter shop, Pedro Miguel District quartermaster, shop and store, Pedro Miguel Municipal engineering division, blacksmith shop, Pedro Miguel		210.
Total, shops.	56, 521. 71	4, 277, 012.
Storehouses:		
Medical, concrete, Ancon		25, 471.
Electrical, concrete, Balboa.	1,787.62	92,573
Evnlosives Balhoa		507.
Forage, Balloa		6,929.
Forage, Baltoa General, concrete, Baltoa Launch supplies, Baltoa	3, 234. 13	587, 558.
Launch supplies, Balboa		1,892.
	5, 445. 50	166,688.
Lumber, concrete, Balboa		94,214.
Lum) er, concrete, BalboaOil, concrete, Balboa		24, 808.
Oil, concrete, Balboa. Oil and county drums. Balboa	24,868.59	20 671
Dumt er, concrete, Baltoa. Oil, concrete, Baltoa. Oil and empty drums, Baltoa.		30,671.
Dumt er, concrete, Baltoa. Oil, concrete, Baltoa. Oil and empty drums, Baltoa.		30,671. 14,923. 5,213
Dumt er, concrete, Baltoa. Oil, concrete, Baltoa. Oil and empty drums, Baltoa.		30, 671. 14, 923. 5, 213. 16, 695.
Oil, concrete, Balboa. Oil, and aunty drums. Balboa		507. 6, 929. 587, 558. 1, 872. 166, 688. 47, 214. 24, 868. 30, 671. 14, 923. 5, 213. 16, 695. 27, 000.

Table No. 20.—Detail of buildings, fiscal year 1920, and to June 30, 1920—Continued.

	Fiscal year 1920.	Total to June 30, 1920.
Storehouses—Continued. Fumigating supplies, Cristobal. General, concrete, Cristobal. Obsolete, Cristobal.		6,270.00
Oil, Cristobal Panama Railroad, mechanical division, and supply department, concrete, Cristobal. Printing plant, Cristobal. Printing plant, addition, Cristobal.	50, 800. 55	50,800.55
Frinting plant, addition, Cristobal Storage shed, building No. 3337, Cristobal store. Storage shed, building No. 3341, Cristobal store. Storage shed for obsolete material, Cristobal Dynamite, Gamboa	1,291.40	342.00 342.00
Fuse, Gamboa General, Gatun Dredge parts, Paraiso Dredging division, Paraiso General, Paraiso		1,841.37 9,750.00 5,558.70 1,000.00 6,000.00
District quartermaster, Pedro Miguel		170.00
Tile plant, Ancon Toilets, Gatun loeks.		6,210.00 4,277.83
Total, buildings	582, 240. 94	17, 269, 824. 28
Charged to— Canal construction Maintenance and operation. Sanitation Civil government.	246, 487, 35 278, 776, 82 56, 855, 13 121, 64	16, 120, 894, 10 1, 047, 018, 74 93, 128, 01 8, 783, 43
Total	582, 240. 94	17, 269, 824. 28

Table No. 21.—Detailed cost power producing and transmitting system, fiscal year 1920, and to June 30, 1920.

	Fiscal year 1920.	To June 30, 1920.
Gatun hydroelectric power plant: Building		\$574,912.79
Exeavation Operating machinery.		54, 862. 07 771, 539. 90
Total, division cost	3,393.97	1,401,314.76
Miraflores steam-electric power plant: Building and site. Operating machinery  Operating machinery		233. 629. 74 27, 448. 90
Total, division cost		261, 078. 64
Power system: Transformer substations— Balboa. Cristobal. Gamboa. Gatum Gold Hill. Miraflores. Transmission line Distribution and duct system Underground duct system—townsites. Street lighting—townsites. Total, division cost.	\$33. 04 53, 426. 80 14, 111. 99 6, 116. 41 81, 690. 79	291, 087, 76 332, 160, 98 23, 775, 03 460, 95, 03 1, 696, 77 359, 946, 69 1, 108, 692, 59 495, 136, 56 359, 180, 20 83, 701, 99
Total, division eost, power producing and transmitting system	85, 084. 76	5, 178, 725. 22
Charged to— Canal construction	211, 921, 58 1 126, 836, 82	5,093,866.66 84,858.56
Total	85, 084. 76	5, 178, 725. 22

Table No. 22.—Detailed cost, permanent townsites, fiscal year 1920, and to June 30, 1920;

	Balbo	a-Ancon.	Cristobal-C	Colon Beach.	Gat	tun.
Item.	Fiscal year 1920.	To June 30,	Fiscal year 1920.	To June 30,	Fiscal year 1920.	To June 30,
Miscellaneous improvements: Preliminary and general work Preliminary mainte-		<b>\$</b> 176, 171. 18	\$926.22	\$94,019.31		\$1,330.09
nanee Drainage Nursery, Balboa-Ancon.		10, 519. 78 7, 903. 21 1, 576. 79	18.68	18.68		
Lot improvements General improvements— Block A		282, 561.35	97,602.48	112,585.65		3.75
Division expense		19, 850.98	639.97	3,458.46		109.10
Total division cost Panama Canal overhead		498, 583. 29 86, 737. 77	99, 187. 35 9, 918. 74	210, 082. 10 21, 064. 70		1,442.94 261.76
Total cost, miseellane- ous improvements		585, 321.06	109, 106. 09	231, 146. 80		1,704.70
Municipal expenses and electrical work: Streets. Walks. Water system. Sewer system. Street lighting. Underground duct system.	\$2,042.21 1,585.53 5,154.22	391, 465. 59 82, 014. 97 55, 847. 84 194, 681. 51 38, 209. 60 244, 119. 74	48, 135. 22 12, 613. 13 18, 353. 09 10, 815. 01 4, 530. 88 6, 877. 59	87, 783. 31 20, 098. 41 29, 971. 75 113, 478. 33 21, 707. 55 92, 772. 44	\$748.99 1,264.58	5, 469. 98 748. 99 5, 064. 72 18, 047. 95
Total division cost Panama Canal overhead.	8,781.96 878.19	1,006,339.25 164,033.68	101, 324. 92 10, 132. 48	365, 811.79 36, 581.16	2,013.57 201.36	29,331.64 3,123.41
Total cost, municipal expenses and electrical work	9,660.15	1,170,372.93	111,457.40	402, 392. 95	2,214.93	32,455.05
Total division cost,	8,781.96	1,504,922.54	200, 512. 27	575, 893. 89	2, 013. 57	30,774.58
Panama Canal over- head, grand total	878.19	250,771.45	20,051.22	57, 645. 86	201.36	3,385.17
Grand total, townsites.	9,660.15	1,755,693.99	220, 563.49	633, 539. 75	2,214.93	34, 159. 75
Charged to Canal construc- tion	56, 864. 58 1 47, 204. 43	1,698,609.30 57,084.69	27, 043.48 193, 520.01	375,687.03 257,852.72	3,097.56 1 882.63	25, 855. 99 8, 303. 76

<sup>1</sup> Credit.

Table No. 22.—Detailed cost, permanent townsites, fiscal year 1920, and to June 30, 1920—Continued.

	Lal	Boca.	Moun	t Hope.	Pedro :	Miguel.
Item.	Fiscal year 1920.	To June 30,	Fiscal year 1920.	To June 30,	Fiscal year 1920.	To June 30,
Miscellaneous improvements: Preliminary and general work. Preliminary maintenance. Drainage. Nursery, Balboa-Ancon.		\$37, 557. 50 31, 869. 40 14, 842. 53				\$45, 884. 40 22, 488. 65
Lot improvements General improvements— Block A Division expense		10, 221. 73 2, 841. 06				787.42 2,162.61
Total division cost Panama Canal overhead		97, 332. 22 25, 873. 91				71,323.08 21,362.53
Total cost, miscellaneous improvements		123, 206. 13				92,685.61
Municipal expenses and elec- trical work: Streets. Walks. Water system. Sewer system. Street lighting. Undergroundductsystem.		6, 267. 28 21, 404. 50 27, 119. 75	\$6, 274. 29	\$6, 274. 29 20. 14	\$414.51	48, 958, 98 348, 28 20, 188, 33 11, 921, 78 17, 567, 10 10, 146, 77
Total division cost Panama Canal overhead	401.09 40.11	55, 192. 62 14, 605. 39	6, 294. 43 629. 45	6,294.43 629.45	414. 51 41. 46	109, 131. 24 24, 524. 64
Total cost, municipal expenses and electrical work	441.20	69, 798. 01	6, 923. 88	6,923.88	455. 97	133, 655, 88
Total division cost, grand total	401.09	152, 524. 84 40, 479. 30	6, 294. 43 629. 45	6,294.43 629.45	414.51	180, 454. 32 45, 887. 17
Grand total, townsites	441.20	193,004.14	6, 923. 88	6, 923. 88	455, 97	226, 341.49
Charged to Canal construction. Charged to capital additions	441.20	192, 562. 94 441. 20	6, 923. 88	6, 923. 88	11,523.23 111,067.26	192, 722. 25 33, 619. 24

<sup>&</sup>lt;sup>1</sup> Credit.

Table No. 22.—Detailed cost, permanent townsites, fiscal year 1920, and to June 30, 1920—Continued.

	Red	Tank.	Total.	
Item.	Fiscal year 1920.	To June 30,	Fiscal year 1920	To June 30, 1920.
Miscellaneous improvements: Preliminary and general work. Preliminary maintenance			\$926.22	\$354, 962.48 42, 389.18
Preliminary maintenance. Drainage.			18.68	45, 253, 07
Nursery, Balboa-Ancon Lot improvements General improvements—Block A.		\$2,194.43	97,602.48	1,576.79 398,132.60 10,221.73
Division expense.		182.32	639.97	28, 604. 53
Total division cost Panama Canal overhead		2,376.75 237.68	99, 187. 35 9, 918. 74	881, 140.38 155, 538.35
Total cost, miscellaneous improvements		2,614.43	109, 106. 09	1,036,678.73
Municipal expenses and electrical work: Streets. Walks. Water system. Sewer system. Street lighting. Underground duet system.		12, 394, 93 3, 536, 67 2, 280, 52 2, 216, 75 3, 289, 43	54, 409. 51 15, 404. 33 18, 353. 09 10, 835. 15 6, 116. 41 14, 111. 99	552, 347. 08 113, 014. 60 129, 692. 94 349, 438. 27 85, 838. 40 365, 487. 99
Total division cost Panama Canal overhead		23,718.31 2,371.84	119,230.48 11,923.05	1,595,819.28 245,869.57
Total cost, municipal expenses and electrical work.		26,090.15	131, 153. 53	1,841,688.85
Total division cost, grand totalPanama Canal overhead, grand total		26,095.06 2,609.52	218,417.83 21,841.79	2,476,959.66 401,407.92
Grand total, townsites		28,704.58	240, 259.62	2,878,367.58
Charged to Canal construction	\$3,070.35	28,704.58	101,599.20 138,660.42	2, 514, 142. 09 364, 225. 49

<sup>1</sup> Credit.

Table No. 23.—Dredging excavation—detailed cost per unit of work, fiscal year 1920.

PACIFIC ENTRANCE—CONSTRUCTION.

Item.	Quantity.	Unit cost.
Operation, pipe-line suction dredges. Repairs, pipe-line suction dredges. Depreciation, pipe-line suction dredges. Operation, miscellaneous floating equipment. Repairs, miscellaneous floating equipment. Depreciation, miscellaneous floating equipment. Dippe lines. Dikes. Dikes. Surveys. Division expense.	17, 800 17, 800 17, 800 17, 800 17, 900	\$0.061 .019 .003 .003 .000 .000 .012 .008 .004
Total, division cost	17,800	. 138

Material excavated, all earth.

Table No. 23.—Dredging excavation—detailed cost per unit of work, fiscal year 1920— Continued.

### TERMINAL FACILITIES-BALBOA.

## [Balboa Inner Harbor and reclaiming land—Construction.]

Item.	Quantity.	Unit cost.
Dredging inner harbor:	Cubic yards.	
Operation, large dipper dredges.	47,550	\$0.1486
Repairs, large dipper dredges	47,550	. 1179
Depreciation, large dipper dredges	47,550	. 0303
Operation, pipe-line suction dredges	15,500	. 0912
Repairs, pipe-line suction dredges	15,500	, 0276
Depreciation, pipe-line suction dredges	15,500	. 0045
Operation, tugs, clapets, and scows	47,550	. 0959
Repairs, tugs, clapets, and scows.	47,550	.0937
Depreciation, tugs, clapets, and scows.	47,550	. 0143
Operation, miscellaneous floating equipment	63,050	. 0041
Repairs, miscellaneous floating equipment	63,050	.0008
Depreciation, miscellaneous floating equipment	63,050	. 0003
Pipe lines.	15,500	. 0654
Surveys.	63,050	. 0185
Division expense	63,050	. 0512
Total, division cost	63,050	. 4991
Earth excavated	53,050	. 8414
Rock excavated		. 1586
Pipe lines	8,500	. 0082
Operation, relay pumps	8,500	. 0159
Maintenance, relay pumps.	8,500	.0014
Division expense.		.0068
Total, division cost	8,500	. 0323

# Table No. 24.—Dredging excavation—Detailed cost of unit of work, fiscal year 1920.

### GAILLARD CUT.

Item.	Quantities.	Unit cost
\	Cubic yards,	
peration, large dipper dredges	2,050,710	\$0,070
Repairs, large dipper dredges		. 056
Depreciation, large dipper dredges.	2,050,710	. 008
peration, pipe-line suction dredges	11,000	1, 586
Repairs, pipe-line suction dredges	11,000	, 623
Depreciation, pipe-line suction dredges	11,000	. 104
peration, tugs and scows	2,050,710	. 120
epairs, tugs and scows.	2,050,710	.072
Depreciation, tugs and scows	2,050,710	.001
peration, miscellaneous floating equipment	2, 121, 710	.007
Repairs, miseellaneous floating equipment	2,121,710	.001
Depreciation, miscellaneous floating equipment	2, 121, 710	.000
peration, drill barges	33,283	. 903
Sepairs, drill barges.	33, 283	. 135
Depreciation, drill barges	33, 283	.010
peration, hydraulic graders	2, 121, 710	. 031
epairs, hydraulic graders	2, 121, 710	.002
epreciation, hydraulic graders	2, 121, 710	.001
rilling	2,121,710	.000
Plasting	2, 121, 710	.000
ipe lines	11,000	. 106
elay pumps	11,000	.046
hannel lights	2, 121, 710	.000
Ditching	2, 121, 710	. 000
'lumes	2,121,710 2,121,710 2,121,710	.000
luicing	2, 121, 710	.005
urveys	2,121,710	. 016
Division expense	2,121,710	.047
faintenance of water lines	2, 121, 710	.001
Total, division cost	2,121,710	. 481
Carth excavated	919, 835	. 433
Rock excavateddo	1,201,875	. 566

Table No. 24.—Dredging excavation—Detailed cost of unit of work, fiscal year 1920—Continued.

### PACIFIC ENTRANCE-OPERATION AND MAINTENANCE,

Operation, large dipper dredges. Repairs, large dipper dredges. Depreciation, large dipper dredges. Operation, pipe-line suction dredge. Repairs, pipe-line suction dredge. Depreciation, pipe-line suction dredge. Operation, tugs and seows. Repairs, tugs and seows. Repairs, tugs and scows. Operation, tugs and scows. Operation, drill barges. Repairs, drill barges. Depreciation, drill barges. Operation, drill barges. Operation, miscellaneous floating equipment. Repairs, miscellaneous floating equipment.	Cubic yards. 21,300 21,300 21,300 1,543,600 1,543,600 1,543,600 21,300 21,300 21,300 13,814	\$0. 1562 . 1010 . 0163 . 0747 . 0237 . 0044 . 1923 . 2227
Repairs, large dipper dredges.  Depreciation, large dipper dredges.  Depreciation, pipe-line suction dredge.  Repairs, pipe-line suction dredge.  Depreciation, pipe-line suction dredge.  Depreciation, tugs and scows.  Repairs, tugs and scows.  Depreciation, tugs and scows.  Depreciation, trigs and scows.  Depreciation, drill barges.  Repairs, drill barges.  Depreciation, drill barges.  Depreciation, miscellaneous floating equipment.	21,300 21,300 21,300 1,543,600 1,543,600 21,300 21,300 21,300 13,814	. 1010 . 0163 . 0747 . 0237 . 0044 . 1923
Repairs, large dipper dredges.  Depreciation, large dipper dredges.  Depreciation, pipe-line suction dredge.  Repairs, pipe-line suction dredge.  Depreciation, pipe-line suction dredge.  Depreciation, tugs and scows.  Repairs, tugs and scows.  Depreciation, tugs and scows.  Depreciation, trigs and scows.  Depreciation, drill barges.  Repairs, drill barges.  Depreciation, drill barges.  Depreciation, miscellaneous floating equipment.	21,300 21,300 1,543,600 1,543,600 1,543,600 21,300 21,300 21,300 13,814	. 1010 . 0163 . 0747 . 0237 . 0044 . 1923
Depreciation, large dipper dredges Depretion, pipe-line suction dredge Repairs, pipe-line suction dredge Depreciation, pipe-line suction dredge Depretion, tugs and seows Repairs, tugs and seows Depreciation, tugs and seows Depreciation, drill barges Repairs, drill barges Repairs, drill barges Depreciation, drill barges Depreciation, miscellaneous floating equipment	21,300 1,543,600 1,543,600 1,543,600 21,300 21,300 21,300 13,814	. 0163 . 0747 . 0237 . 0044 . 1923
Decration, pipe-line suction dredge.  Repairs, pipe-line suction dredge.  Depreciation, pipe-line suction dredge.  Decration, t ugs and scows.  Repairs, tugs and scows.  Depreciation, trigs and scows.  Depreciation, drill barges.  Repairs, drill barges.  Depreciation, drill barges.  Depreciation, miscellaneous floating equipment.	1,543,600 1,543,600 1,543,600 21,300 21,300 21,300 13,814	. 0747 . 0237 . 0044 . 1923
Kepairs, pipe-line suction dredge Depreciation, pipe-line suction dredge.  Depretation, tugs and seows.  Repairs, tugs and seows.  Depreciation, tugs and seows.  Depreciation, drill barges Repairs, drill barges  Depreciation, drill barges  Depreciation, miscellaneous floating equipment	1,543,600 1,543,600 21,300 21,300 21,300 13,814	. 0237 . 0044 . 1923
Operation, Lugs and scows Repairs, Lugs and scows Depreciation, tugs and scows Operation, drill barges Repairs, drill barges Depreciation, drill barges Depreciation, miscellaneous floating equipment	1,543,600 21,300 21,300 21,300 13,814	.0044
Operation, Lugs and scows Repairs, Lugs and scows Depreciation, tugs and scows Operation, drill barges Repairs, drill barges Depreciation, drill barges Depreciation, miscellaneous floating equipment	21,300 21,300 21,300 13,814	. 1923
Repairs, tugs and scows. Depreciation, tugs and scows. Depretion, drill barges. Repairs, drill barges. Depereciation, drill barges. Deperation, miscellaneous floating equipment.	21,300 21,300 13,814	
Depreciation, tugs and scows.  Depration, drill barges  Repairs, drill barges  Depreciation, drill barges  Depration, miscellaneous floating equipment	21,300 13,814	
Operation, drill barges Repairs, drill barges Depreciation, drill barges Decration, miscellaneous floating equipment	13,814	.0304
Repairs, drill barges Depreciation, drill barges Decration, miscellaneous floating equipment		1.4414
Depreciation, drill barges	13, 814	. 1522
Operation, miscellaneous floating equipment	13,814	. 0123
Pensirs miscallaneous floating equipment	1, 564, 900	.0039
	1,564,900	.0009
henragistion mis collangue floating equipment	1, 564, 900	.0009
Depreciation, mis cellaneous floating equipment Pipe lines		
Dikes	1,543,600	. 0213
Vitabina	1,543,600	.0009
Ditching	1, 564, 900	.0009
Surveys	1, 564, 900	.0058
Division expense	1,564,900	. 0264
Total, division cost	1,564,900	. 1854
Earth excavatedper cent.	1,546,900	. 9885
Rock excavateddo	18,000	.0115
PACIFIC INNER HARBOR—MAINTENANCE		
Oredging inner harbor:	1	
Operation, large dipper dredges	179,750	\$0.1687
Repairs, large dipper dredges.	179,750	. 1294
Depreciation, large dipper dredges	179, 750 179, 750	. 0321
Operation, pipe-line suction dredges.	325,900	.0904
Repairs, pipe-line suction dredges	325,900	. 0277
Depreciation, pipe-line suction dredges	325,900 179,750	.0048
Operation, tugs and scows	179, 750	. 1386
Repairs, tugs and scows	179,750	. 1221
Depreciation, tugs and scows	179,750	. 0233
Operation, miscellaneous floating equipment.	505,650	. 0057
Repairs, miscellaneous floating equipment	505,650	.0012
Repairs, miscellaneous floating equipment Depreciation, miscellaneous floating equipment	505,650	,0005
Pipe lines	288,900	.0216
Surveys	505, 650	.0084
Division expense	505,650	.0370
Total, division cost	505, 650	. 3537
Seclaiming land:		
Pipe lines	205, 500	. 0143
	205, 500	.0196
Operation relay pumps Maintenance	205, 500	. 0036

Material excavated, all earth.

Total, division cost.....

Table No. 25.—Dredging—Gamboa gravel production—Detail cost per unit of work, fiscal year 1920 (December, 1919, to June, 1920, inclusive).

205,500

.0462

	Decem- ber.	January.	Feb- ruary.	March.	April.	May.	June.	Total.
Quantities, cubic yards	1,068	15,902	14,825	20,809	21,842	21,997	23, 175	119,618
Unloading from barges	\$2.1306 .0373	\$0.0550 .1325	\$0.0708 .1172	\$0.0575 ,1039	\$0.0594 .1005	\$0.0562 .0975	\$0.0518 .0987	\$0.0763 .1060
Storing Repairs to equipment. Dredging and towing.		. 2572 . 0821 . 6168	. 1825 . 0866 . 7659	. 1088 . 0553 . 7147	. 1917 . 1079 . 6014	. 1056 . 0493 . 5284	. 0884 2. 1587 . 5306	. 0569 . 2888 . 6371
Plant arbitrary Division expense		. 2000	. 2000	. 2000	. 2000	. 2000	. 2000	. 1982
Total, division cost	5.1808	1.3942	1.4662	1. 2752	1. 2982	1.0639	3.1641	1.4030

\*Table No. 26.—Detail of cost of production and distribution of electric current for fiscal year 1920.

	July.	Augus	t. Sept	ember.	Oc	tober.	November.	December.
Power plants:								
Gatun hydroelectric	\$4,627.16	\$2,544.	95 \$3,9	81.91	\$4,	023.10	\$4, 258.81	\$3,930.65
Miraflores steam Reserve for depreciation	9,367.94 8,000.00	8,713. 25,000.	43 8, 3 00 6, 3	511.17 390.00	8, 6,	679.55 390.00	8,665.69 6,390.00	8,507.55 6,390.00
Total production cost	21, 995. 10	36, 258.	38 18,8	883.08	19,	092.65	19, 314. 50	18,828.1
Substations: Cristobal	1 500 20	1,488.	00 1 6	14 95	,	477 86	1,672.92	1 478 6
Gatun	1,500.39 2,168.89	955.	$\frac{35}{35}$   $\frac{1}{1.8}$	814. 25 805. 26	1,	477.86 555.72	1,553.12	1, 478. 6 1, 813. 1
Miraflores	1,912.84	1, 458.	58   1.8	567.82	2.	032,83	1,553.12 2,081.87	+ 2, 012, 43
Balboa	1,813.24	863.	81 1,8	12.95 85.00	1, 4	833. 23 385. 00	1,700.06 4,385.00	1,497.00 4,385.00
Transmission lines:					· '			· ·
Cristobal to Gatun	101.31 265.00	210. 25.		51.60		315.36	59.82	163.3
Miraflores to Balboa Gatun to Miraflores	1, 494. 21			49.52		699.65	30.14 398.77	363.02
Gatun underground					· <u>.</u> -			
Reserve for depreciation  Distribution lines	2,657.68	4,092.	$\frac{2}{70}$ , $\frac{2}{5}$ , $\frac{2}{7}$	50.00 55.40	- 2, 5	250.00 276.48	2, 250.00 5, 707.97	2, 250. 00 5, 680. 39
Reserve for repairs—power	2,001.00	1,002.	.0   0,1	00. 10	· ·			
system						500.00	500.00	500.00
Cost of current distrib-	33, 908. 66	47,051.	00 20 0	74.88	20	418.78	39, 654. 17	38,971.10
		- <del> </del>						
Kilowatt hours distributed Cost per kilowatt hour:	4,417,078	4,584,6		5,679	•	49, 394	4,365,968	4,829,153
Production Current distributed	\$0.0050 .0077	\$0.00 .01		.0043	8	0.0042	\$0.0044 .0091	\$0.0039 .0081
	January.	Feb- ruary.	March.	Ap	oril.	May	June.	Total.
	-			_		-		
Power plants: Gatun hydroelectric	\$4,107.22	\$4, 166. 26	\$4,330.86	\$4,30	5 62	\$4,711.	14 \$3,784.0	6 \$48,771.71
Miraflores steam	6, 474, 27	4,993.68	25, 367. 22	2  24,96	5.85	20, 423.	12   7, 431.1	7 142, 100.61
Reserve for depreciation	6,390.00	6,390.00	6,390.00	6,39	0.00	6,390.	00   6,390.0	0   96,900.00
Total production cost	16, 971. 49	15, 549. 94	36, 088. 08	35,66	1.47	31, 524.	26 17, 605. 2	3 287, 772. 32
Substations:								
Cristobal	1, 482. 48	1,664.84	1,316.32	$\begin{bmatrix} 1,34 \\ 1,76 \end{bmatrix}$	0.84	1,547.	01   1,656.7	$1 \mid 18, 241.11$
Gatun Miraflores	1,942.68	1,664.84 2,259.44 1,883.12	1, 947. 07	1,91	0.30	1,884.	19   2,389.6	1 18, 241. 11 8 21, 510. 02 7 23, 323. 42 2 19, 071. 58
Balboa	1,432.43 2,054.93 1,942.68 1,415.09 4,385.00	1,426.57 4,385.00	1,316.32 1,798.12 1,947.07 1,716.97 4,385.00	1,84	0.84 7.20 0.30 1.32 5.00	1,547. 1,828. 1,884. 1,579.	01 1,656.7 56 1,950.2 19 2,389.6 72 1,871.6 00 4,385.0	2   19,071.58
Reserve for depreciation Transmission lines:	4,385.00	4,385.00	4,385.00	4,38	ə. 00	4, 385.	00   4,385.0	43,850.00
Cristobal to Gatun	131.60	122.10	288.97	91	7.71	164.	12 256.13	3, 282. 25
Miraflores to Balboa Gatun to Miraflores	72. 23 642. 95	62.60 499.63	72. 27 740. 19	$\binom{2}{2,69}$	5.00	362. 1,089.	$ \begin{array}{c cccc} 02 & 90.20 \\ 11 & 807,30 \end{array} $	5   1,005.34
Gatun underground		199.00	740.13			1,000.	36 G	
Reserve for depreciation	2, 250.00	2, 250.00	2, 250. 00	2, 25		2, 250.		22, 500. 00
Distribution lines	6,364.75	5,098.63	6,335.21	5, 14	8.47	5, 102.	66 5,691.2	62,911.59
		500.00	500.00	50	0.00	500.	00 500.00	4,500.00
tem	500.00	000.00						
Cost of current distributed		35,701.87	57, 438. 20	58, 43	7.73	52, 216.	65 39, 490. 15	5 520, 477. 29
Cost of current distributed Kilowatt hours distributed	38, 213. 20		57, 438. 20 4, 752, 618	= =		52, 216. 4, 685, 0		
Cost of current distributed	38, 213. 20	35,701.87		4,507		<del></del>	90 4, 753, 138	55, 300, 094

Table No. 27.—Cost of water per 1,000 gallons, fiscal year 1920, Ancon-Balboa-Panama system.

[Quantities exclude water used in city of Panama and North of Pedro Miguel.]

	Quantity, 1,000 gallons.	Mainte- nance Gamboa pump station.	Opera- tion Mira- flores flltration plant.	Operation Balboa pump station.	Mainte- nance water mains.	Total.
July 1919. Angust September October November December	154,651 137,207 130,829	\$0.0162 .0151 .0174 .0160 .0047 .0287	\$0.0179 .0186 .0221 .0225 .0151 .0276	\$0.0108 .0107 .0160 .0135 .0057 .0256	\$0.0010 .0077 .0383 .0307 .0359 .0385	\$0.0459 .0521 .0938 .0827 .0614 .1204
January. February. March. A pril. May. June.	157, 275 173, 234 147, 402	.0148 .0155 .0141 .0209 .0227 .0205	.0190 .0193 .0191 .0210 .0223 .0254	.0121 .0121 .0118 .0169 .0176 .0166	.0176 .0162 .0212 .0291 .0274 .0281	.0635 .0631 .0662 .0879 .0900 .0906

Table No. 28.—Cost of water per 1,000 gallons, fiscal year 1920, Colon-Cristobal system.
[Quantities exclude water used in city of Colon.]

	Quantity, 1,000 gallons.	Mainte- nance Brazos brook reservoir.	Operation Mount Hope filtration plant.	Operation Mount Hope pump station.	Mainte- nance water mains.	Total.
July 1919. August September October November December	133,037	\$0.0120 .0112 .0105 .0130 .0100 .0061	\$0.0104 .0103 .0103 .0104 .0072 .0129	\$0.0173 .0166 .0168 .0153 .0165 .0333	\$0.0317 .0315 .0329 .0426 1.0079 .0248	\$0.0714 .0696 .0705 .0813 .0258 .0771
January	162, 751 139, 973 114, 062 139, 781 99, 725 85, 684 1, 532, 312	.0060 .0060 .0095 .0064 .0071 .0075	.0103 .0100 .0120 .0120 .0131 .0156	.0147 .0145 .0189 .0241 .0206 .0192	.0221 .0114 .0163 .0121 .0222 1.0576	. 0531 . 0419 . 0567 . 0546 . 0630 1 . 0153

<sup>1</sup> Credit.

Table No. 29.—Cost of water per 1,000 gallons, fiscal year 1920, Gatun system.

	Quantity, 1,000 gallons.	Mainte- nance Agua Clara reservoir.	O peration Agua Clara filtration plant.	Operation Agua Clara pump station.	Mainte- nance water mains,	Total.
July, August, September	30, 297 31, 895	\$0.0390 .0422 .0413 .0529 .0523 .0378	\$0.0346 .0430 .0355 .0513 .0260 .0532	\$0.0431 .0447 .0491 .0402 .0321 .0784	\$0,0207 .0262 .0075 .0256 .0225 .0214	\$0.1374 .1561 .1334 .1700 .1329 .1908
January. February. March. April. May. June. Total.	38, 152 38, 299 40, 532 41, 629 42, 292 37, 956	.0318 .0250 .0221 .0193 .2360 .0234	.0386 .0382 .0598 .0748 .0660 .0666	. 0419 . 0382 . 0357 . 0443 . 0528 . 0279	.0100 .0135 .0096 .0127 .0080 1.0113	.1223 .1149 .1272 .1511 .1504 .0766

Table No. 30.—Cost of operating all quarters for employees, fiscal year 1920.

,		July, 1919.	August, 1919.	September, 1919.	October, 1919.
Repairs to buildings. Fuel—coal and kindling. Grass cutting. Disposal of garbage. Repairs to furniture. Repairs to furniture. Grasservice. Janitor service. Utility service Care of grounds. Mattress factory. Electric lighting. Division expense.		\$24,369.19 8,167.36 3,568.60 2,348.96	\$26, 687.65 8, 864.26 3, 741.85 1, 977.89	\$28,516.17 7,631 90 3,564.39 1,780.06 4,483.02 1,817.72	\$38, 358, 14 8, 120, 13 3, 825, 54 1, 688, 72
Repairs to stoves.  Corral service.  Janitor service.		2,348.96 3,349,55 1,900.94 4,468.55 7,835.78	3,322.69 1,594.24 3,904.87 7,569.41	9,031.03	1,688.72 4,162.27 1,593.37 5,199.52 7,771.76
Utility service Care of grounds. Mattress factory. Electric lighting.		3,181,92 6,973,47 466,85 7,541,36	3,095.40 7,067.03 3,404.44 7,671.42 4,717.09	3,530 52 6,257.43 1,119.17 7,569 39 4,200.76	3,679.44 7,392.85 1,552.93 7,750 20 4,215 15
Total, division cost  Equipment and tools. Furniture, mattresses, and stoves. Install hot water tanks in gold bachelor qua		78,710.49 717.82 2,790.88	83, 618. 24 146. 25 1, 543. 96	83,551.28 1,937.91 4,423.63	95, 220. 02 414. 09 1 990. 72
		2,218.22	220.39	268.79	12.20
Total, division cost		84, 437. 41	85, 528. 84	90, 181.61	94,655.59
		November, 1919.	December, 1919.	January, 1920.	February, 1920.
Repairs to buildings Fuel—coal and kindling Grass cutting		\$28,021.91 6,974.08 3,218.47	\$36, 753.02 6, 712.15 3, 510.16	\$38, 201. 54 7, 745. 80 4, 129. 92	\$26,320.12 8,444.37 1,615.64
Disposal of garbage Repairs to furniture. Repairs to stoves Corral service.	2, 153. 86 2, 822. 05 2, 243. 11 3, 877. 20	2,092.61	1,633.22	1,951.03 4,982.75 1,493.25 3,372.96	
Fuel—coal and kindling. Grass cutting Disposal of garbage Repairs to furniture. Repairs to stoves Corral service. Janitor service Utility service Care of grounds. Mattress factory Electric lighting Division expense		7, 510. 32 2, 933. 28 6, 240. 23 2, 074. 45	2, 352, 85 5, 280, 61 7, 746, 18 3, 067, 84 7, 762, 51 1, 258, 56	1,857.67 4,643.60 7,982.31 3,247.61 7,196.85 1,135.30	1, 493. 25 3, 372. 96 7, 733. 36 2, 162. 79 6, 876. 11 878. 06
Electric lighting. Division expense		8, 551.77 4, 124.92	8, 241. 81 3, 968. 07	7, 539. 20 3, 662. 51	5, 931. 10 4, 555. 88
Total, division cost Equipment and tools. Furniture, mattresses, and stoves. Install hot water tanks in gold bachelor qua	arters	80, 745.65 1, 373.14 143.07 55.59	92, 717. 12 12, 293. 18 328. 88 15. 50	95, 325. 24 1 2, 251. 38 12, 600. 53	76, 317. 42 7, 386. 25 794. 89
Total, division cost	•••••	82, 317. 45	90,768.32	105, 674. 39	84, 498. 56
	March, 1920.	April, 1920.	May, 1920.	June, 1920.	Total, 1920.
Repairs to buildings Fuel—coal and kindling Grass cutting.	\$18, 931. 74 10, 795. 70 1, 753. 27 2, 030. 78	\$41, 206.65 10, 059.07 1, 173.26	\$36, 593, 91 11, 200, 75 2, 838, 22	\$30,234.05 9,225.88 4,145.25 1,895.74 6,247.62 2,087.97 6,188.79 9,441.34	\$374, 194.09 103, 941.45 37, 084.57 24, 536.92 54, 704.65 23, 020.50
Bisposal of garbage Repairs to furniture Repairs to stoves Corral service.	2,030.78 3,903.41 1,715.72 3,487.88	1,947.35 5,369.55 2,059.39 3,935.84	2, 838. 22 3, 036. 70 5, 741. 28 2, 394. 27 5, 633. 79	1,895.74 6,247.62 2,087.97 6,188.79	
Repairs to buildings. Fuel—coal and kindling Grass cutting. Disposal of garbage Repairs to furniture Repairs to stoves Corral service. Janitor service. Utility service. Care of grounds. Mattress factory Electric lighting Division expense.	9, 327. 84 3, 842. 85 8, 293. 33 119. 40 8, 822. 70 3, 761. 98	9,824.26 4,553.03 8,051.31 3,005.19 2.29 3,170.67	8, 604.71 3, 431.72 8, 210.69 1771.88 8, 051.46 3, 365.61	9, 441.34 3, 150.69 8, 925.00 1, 329.78 15, 365.38 4, 405.15	99, 396, 97 39, 877, 09 89, 246, 81 15, 572, 25 93, 038, 08 48, 685, 75
Total, division cost.  Equipment and tools.  Furniture, mattresses, and stoves.  Install hot water tanks in gold bachelor	76,786.60 1,456.19 1,341.16	94, 357. 86 2, 481. 47 4, 400. 90	98,331.23 370.41 11,128.38	102,642.64 660.21 3,086.29	1,058,323.79 12,399.18 41,591.85
quarters  Total, division cost	79, 583, 95	2, 540. 15	1,370.85	330.68	$\frac{7,032.37}{1,119,347.19}$
	,				

Table No. 31.—Statement of appropriation, receipts, and disbursements for fiscal year ended June 30, 1920.

		Rec	eipts.		
	Cash balance July 1, 1919.	Appropriations.	Collections.	Transfers between departments	Total available.
Canal connecting Atlantic and Pacific Oceans. Panama Canal fund. Construction and equipment. Maintenance and operation. Sanitation Civil government Increase of compensation, 1918. Increase of compensation, 1919. Increase of compensation, 1920.	\$403, 964, 22 177, 094, 63 2, 517, 644, 81 5, 077, 902, 79 248, 328, 85 51, 335, 40 782, 20 493, 40	\$729, 898. 00 7, 547, 939. 00 850, 000. 00 852, 000. 00 18. 33 35, 000. 00	\$20,000.00 56.35 83.34 16,670,873.15 726,684.99 56,805.18	\$4,507,888.46 45,092.88	\$423, 964. 22 177, 150. 98 3, 247, 626. 15 33, 804, 603. 84 1, 825, 013. 84 1, 005, 233. 46 782. 20 511. 73 35, 000. 67
Total	8, 477, 546. 30	10,014,855.33	17, 474, 503. 68	4, 552, 981.34	40, 519, 886. 65
Presenting launch Louise to French Government	159.01 1,500.00				159.01 1,500.00
F. Lackey. Annual payment to Republic of Panama. Censorship of foreign mails, 1919. Regulating commerce, etc., 1919.	250,000.00 77,326.85 38,380.18	250,000.00			500,000.00 77,326.85 38,380.18
Total	367, 366. 04	250,000.00			617, 366. 04
			Expenditures		
		Disburse- ments.	Transfers between departments.	Total.	Cash balance June 30, 1920.
Canal connecting Atlantic and Pa Panama Canal fund. Construction and equipment. Maintenance and operation. Sanitation. Civil government. Increase of compensation, 1918. Increase of compensation, 1919. Increase of compensation, 1920.		\$404.10 844.48 522,898.38 24,233,657.11 1,299,439.73 794,633.92 782.20 41.66 32,435.10	\$25,386.79 44,314.42 920,740.85 235,477.12 58,152.39	\$25,790.89 45,158.90 1,443,639.23 24,233,657.11 1,534,916.85 852,786.31 782.20 41.66 32,435.10	\$398, 173. 33 131, 992.08 1, 803, 986. 92 9, 570, 946. 29 290, 096. 99 152, 447. 15
Total		26, 885, 136. 68	1,284,071.57	28, 169, 208. 25	12,350,678.40
Presenting launch Louise to Frement	Lackev	250,000.00	24, 121. 64 16, 813. 38	250,000.00 24,121.64 16,813.38	159.01 1,500.00 250,000.00 53,205.21 21,566.80
Total		250,000.00	40,935.02	290,935.02	326,431.02

Table No. 32.—Payments by fiscal officers.

# BY PAYMASTER.

		REPORT OF AU	JDII
	Grand total.	\$\$, 660, 774, 52 2, 995, 254, 63 3, 578, 281, 24 3, 274, 983, 24 3, 277, 666, 25 3, 277, 666, 25 3, 276, 288, 96 3, 422, 951, 85 3, 422, 954, 85 3, 482, 538, 39 3, 382, 538, 38 3, 197, 073, 38	38, 426, 733, 29
nents.	Total.	\$886, 743, 20 1, 508, 387, 24 1, 508, 832, 05 1, 102, 097, 99 1, 429, 954, 63 1, 439, 544, 91 1, 81, 181, 181, 181, 181, 181, 181, 1	15, 134, 762. 00
Panama Railroad payments.	Vouchers.	\$336, 200, 68 \$336, 200, 68 922, 100, 23 742, 367, 69 1, 008, 344, 44 885, 683, 01 889, 714, 14 789, 774, 14 789, 789, 789, 789, 789, 789, 789, 789,	10, 117, 106. 77
Panan	Pay rolls.	8339, 533, 52 831, 505, 39 448, 506, 39 373, 830, 77 329, 7730, 90 421, 610, 19 442, 837, 74 440, 111, 64 452, 124, 38 452, 868, 88	5,017,655.23
	Total.	81, 765, 031.32 1, 908, 886.79 2, 188, 155.00 1, 906, 180.22 1, 91, 711.02 1, 929, 091.65 1, 931, 883, 684, 65 1, 931, 932, 64 1, 931, 932, 733.70 1, 931, 932, 733.70 1, 931, 932, 733.70 1, 933, 224, 51	23, 291, 971. 29
il payments.	Vouchers.	\$663, 757. 71 \$663, 757. 71 \$641.35. 95 \$949.135. 65 \$10, 870. 55 \$10, 870. 55 \$10, 870. 55 \$10, 870. 55 \$10, 870. 55 \$10, 877. 79 \$10, 877. 70 \$10,	8, 395, 094. 25
Panama Canal payments.	Sliver rolls.	\$507, 856.34 574, 044.47 573, 044.45 572, 004.47 572, 005.60 572, 005.60 572, 006.90 578, 999.02 578, 999.02 578, 999.02 578, 999.02 579, 106.64 529, 993.38 566, 133.38	6, 505, 810. 88
	Gold rolls.	\$588, 417. 27 653, 010. 05 653, 010. 05 669, 573. 888. 17 669, 573. 685. 01 708, 000. 60 708, 105. 32 704, 105. 32 794, 175. 20 813, 775. 86 729, 448. 85	8, 391, 066. 16
Month		July. Augist September September November December 1920. January February April May June	1.0tal.

Table No. 32.—Payments by fiscal officers—Continued.

# BY COLLECTOR.

Table No. 33.—Statement of eollections repaid to appropriations and to individuals and companies and collections deposited to miscellaneous receipts during the fiscal year ended June 30, 1920.

Department and classification.	Total, fiscal year 1920.	Department and classification.	Total, fiscal year 1920.
DEPARTMENT OF OPERATION AND		SUPPLY DEPARTMENT—continued.	
MAINTENANCE.		Quartermaster—Continued.	
Gross receipts from sales of other than Canal construction material.	\$366, 152. 19	Minor services, supplies, and	\$111, 179, 45
Electrical	556.25	property	\$111, 179, 45 1, 139, 901, 75 378, 49
Municipal engineering Marine	556, 25 8, 32 7, 26		
than Canal construction material. Electrical. Municipal engineering. Marine. Dams and backfill Balboa shops. Quartermaster Building. Washington office. Undistributed expenditures. Reserve for losses on obsolete stock. Clubs and playgrounds. Construction and repairs Shop work.	6.00 2,028.04	Total, quartermaster	3, 152, 209. 05
Quartermaster	568, 66	Total, supply department	4, 263, 731. 63
Building	8.10 .97	ACCOUNTING DEPARTMENT.	
Undistributed expenditures	2,815.11 92,578.19	Overnayments	269.26
Clubs and playgrounds	9.00	Overpayments Lost property Auditor	658.65
Construction and repairs	1,362,456.91	Collector	134. 00 115. 75
Electric work	4,391,518.09 382,799.45 127,640.28	Lost metal checks.	383, 62
Train service and use of rolling	127, 640. 28	Additor Collector Lost metal checks Cablegrams Proportion of salaries. Rental of safety deposit box. Minor services, supplies, and proports	2,009.65 206,012.32
equipment	540, 49 300, 703, 00	Rental of safety deposit box	529.60
Service of other floating equipment	78, 274. 12	erty	5, 189. 93
Construction and repairs Shop work Electric work Electric current Train service and use of rolling equipment Tug service Service of other floating equipment. Pilotage Wharfage	309, 793, 90 78, 274, 12 73, 203, 00 29, 100, 77 111, 503, 86	Total, accounting department.	215, 302, 78
Sales of water	111,503.86		
ama water works	226, 719, 65 64, 220, 50 1, 108, 00 2, 824, 50 98, 647, 45	EXECUTIVE DEPARTMENT.	
Handling lines at locks	64,220,50	Executive, miscellaneous	6.50 80.720.56
Steamship inspection	2,824.50	Proportion of salaries	80,720.56 1,343.07
Minor services, supplies, and prop-	98, 647. 45	Minor services, supplies, and prop-	8,960.00
erty	21,094.39 121,681.71	erty. Canal Record Lost photo identification checks	161, 03 54, 49
Dry dock, Cristobal	28,598.92 21,505.61	Lost photo identification checks	346.44
Coupon books	21,505.61	Annual report	. 50
Operation and maintenance of Panama water works. Handling lines at locks. Handling lines at docks. Steamship inspection Dredging. Minor services, supplies, and property. Dry dock, Balboa Dry dock, Cristobal United States invoices Coupon books. Reserves.	1,876.96	Total, executive department	91,592.59
Total, department of opera- tion and maintenance	7,919,897.21	CIVIL GOVERNMENT.	
SUPPLY DEPARTMENT.		Police and prisons	84.00 5,459.00
		School tuition. Sale of school books.	000.00
Subsistence: Commissary coupons honored by		Police services. Minor services, supplies, and prop-	30,020.38
Panama Canal	704, 554, 53 2, 25	erty. Postal services.	8,922.08
Meals furnished	26,760,10	Services of customs officers	1,325.00 762.00
Panama Canal Subsistence Meals furnished Hotel Tivoli Hotel Aspinwall Line hotels Masses	30,983.98	Total, civil government	47, 222. 49
Line hotels	26,760,10 191,206,55 30,983,98 89,533,74 16,428,11		11,222.10
Messes Minor services, supplies, and property Laborers' meal tickets.	1 400 00	MISCELLANEOUS.	
Laborers' meal tickets	1,496.90 50,556.42	Land rental	17,987.50 3,293.25
		Building rental Land office expense	3,293.25 8,250.00
Total, subsistence	1,111,022.00	Joint Commission transcripts	8,250.00 7.20 46.68
Quartermaster:	1 4, 25	Land rental. Building rental Land office expense. Joint Commission transcripts. Equipment rental. Rental of pier Boathouse rentals.	8,348.34 359.94
Audited bills. Claims versus carriers	1,951.29	Boathouse rentals	359.94
Quartermaster Material from stock Rock, sand, and gravel, etc. Printing and binding	1,263,30 1,226,707.08 21,480.40 50,124.59	Total, miscellancous	
Rock, sand, and gravel, etc	21, 480. 40 50, 124, 59	HEALTH DEPARTMENT.	
Corral.	138, 852. 89		107 01
Kental of gold quarters	832. 81 113, 900. 51	HealthSanto Tomas Hospital	107. S1 707. 47
Rental of silver quarters.		TT. 1. 1	
Rental of silver quarters	113,900.51 8,607.84 5,683.53	Ancon Hospital:	199 895 55
Rental of gold quarters. Rental of silver quarters. Garage rentals. Ancon nursery. Handling luel oil. Operation of stores. Operation of quarters.	8,607,84 5,683,52 137,421,41 54,027,97 139,900,00	Fees	199, 895, 55 17, 048, 98 5, 819, 77 2, 362, 12

Table No. 33.—Statement of collections repaid to appropriations and to individuals and companies and collections deposited to miscellaneous receipts during the fiscal year ended June 30, 1920—Continued.

HEALTH DEPARTMENT—continued.			
		COLLECTIONS FOR INDIVIDUALS	
Colon Hospital:		AND COMPANIES.	
Fees	\$24,248,91	Paymaster, various individuals and	
Mess.	4, 155, 22	companies	\$706.82
Miscellaneous	512.05	Paymaster, Panama Railroad com-	
Palo Seco Leper Asylum	23,147.04	missary books	29. 34
Dispensaries	13,659.02	Total, collections for indi-	
Subsistence	39, 592. 19	viduals and companies	736.16
Other charges	8,006.97		
Sanitation:		RECAPITULATION.	
PanamaColon		Department of exerction and main	
Zone		Department of operation and main- tenance.	7,919,897.21
Street cleaning:	1	Supply department:	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Panama		Subsistence \$1,111,522.58	
Colon Corozal Hospital;	37, 964. 46	Quartermaster 3, 152, 209.05	4 969 791 69
Produce	12,650.90	Accounting department	4, 263, 731. 63 215, 302. 78
Pasturage	127.10	Executive department.	91, 592. 59
Burials	647.50		
Insane asylum Sales from medical store.	127,061.02	Total, maintenance and opera-	10 100 701 01
District dentist, Ancon Hospital	65,764.63	tion Total, civil government	12, 490, 524. 21 47, 222. 49
sistinct delitiet, illicott izospituit	520.00	Total, sanitation	683, 482. 54
Total, health department	683, 482. 54	Total, miscellaneous	38, 292. 91
MISCELLANEOUS RECEIPTS.		Total, repay to appropria-	
Gross receipts from sale of Canal		tions	13, 259, 522. 15
construction material	12,034,19	Miscellaneous receipts	8,765,868.77 736.16
fiscellaneous credits due Canal	12,001,10	and the companies of the contract of the contr	
construction accounts	6,520.00	Grand total for year	22, 026, 127.08
Vater rentals, Panama and Colon Reserve for losses on obsolete stock	63,684.84 17,781.62	Charles deposits on Tatherna	18,631,811,32
nterest on bank balances	50,000.00	Special deposits on Isthmus	2,287,783.21
verages	3.06	pecial deposits in emited states	2,201,100.21
fiscellaneous	6,380.11	Total, special deposits	20, 919, 594. 53
olls	8,456,472.07		
ourt fees and fines	15, 354. 05 27, 694. 45		
ostal receipts	109, 117, 48		
Iiscellaneous, Canal Zone	826.90		
Total, miscellaneous receipts	8,765,868.77		

Table No. 34.—Statement of transactions in the collector's special deposit account during the fiscal year ended June 30, 1920.

### IN THE UNITED STATES.

Month.	Deposits.	Panama Canal bills applied.	Payments to individuals and companies.1	Refunds.
July	230, 358. 40 235, 705. 43 227, 643. 77	\$140, 325, 77 125, 196, 11 125, 219, 85 139, 316, 03 91, 488, 76 110, 565, 85	\$105, 072. 55 86, 112. 47 81, 666. 02 79, 234. 84 66, 597. 67 66, 252. 29	\$15, 130. 77 12, 310. 90 19, 339. 87 40, 282. 90 33, 405. 78 74, 271. 13
January 1920. Pebruary March April May June Total .	241, 453. 75 124, 002. 70 128, 864. 75 196, 779. 31 63, 249. 00 108, 900. 00 2, 287, 783. 21	118, 397, 95 146, 635, 08 91, 400, 51 54, 293, 63 29, 932, 22 71, 112, 04	79, 996. 11 53, 395. 43 34, 938. 46 32, 057. 77 62, 613. 45 40, 121. 84 788, 058. 90	43, 382, 72 28, 333, 58 51, 851, 29 24, 210, 40 773, 83 16, 510, 79 359, 803, 96

<sup>&</sup>lt;sup>1</sup> Includes the Panama Railroad Company, All American Cables (Inc.), and other individuals and companies.

Table No. 34.—Statement of transactions in the collector's special deposit account during the fiscal year ended June 30, 1920—Continued.

### ON THE ISTHMUS.

Month.	Deposits.	Panama Canal bills applied.	Payments to individuals and companies.	Refunds.
July	1,202,078.42	\$531,179.20 622,785.10 625,002.03 690,678.12 737,041.09 979,639.36	\$458, 385. 27 564, 842. 40 504, 673. 44 594, 509. 20 501, 564. 24 843, 668. 48	\$2,528.97 627.99 3,835.25 5,233.33 152.10 5,805.10
January. 1920. February. March. April. May June. Total.	1, 405, 275, 51 2, 041, 244, 19 1, 957, 484, 87 2, 059, 526, 38 1, 664, 888, 09	1,066,110.04 858,211.27 1,214,185.48 1,309,282.83 1,399,056.77 1,070,406.42 11,103,577.71	611, 935, 43 623, 736, 49 716, 975, 17 584, 204, 76 615, 899, 73 616, 642, 55 7, 237, 037, 16	6,566.06 4,023.56 2,095.27 29,490.63 1,887.82 33,201.83

### RECAPITULATION.

	In the Uni	ted States.	On the l	sthmus.
On hand July 1, 1919 Deposits during year Panama Canal bills applied Payments to individuals and companies Refunds. On hand June 30, 1920.		788, 058. 90 359, 803. 96	18,631,811.32	7, 237, 037. 16 95, 447. 91
Total	2,478,273.55	2,478,273.55	18,876,715.18	18,876,715.18

Table No. 35.—Statement of audited pay rolls on Isthmus during fiscal year 1920.

	Total.	Salaries.	Wages.
peration and maintenance:			
Executive office—			
Executive	\$20,875.60	\$20,875.60	\$785.2
Record	64, 180. 89	63,395.66	
Personnel	28, 458. 21	28, 458. 21	
Correspondence	38,233.56	38, 233. 56	
Property	29,532.90	29,532.90	
Statistics	14,411.87	14,411.87	
General	30,769.96	30, 142. 45	627.5
Timekeeping	93, 102. 09	93, 102.09	
Shipping commissioner	27, 771.11	27,771.11	
Motor cars	12, 297. 02	3,840.00	8,457.0
Clubs and playgrounds	138,335.04	123,901.75	14, 433. 2
Total, executive office	497,968.25	473,665.20	24,303.0
Engineer of maintenance—			
Lock operation—			
Atlantic	286, 141.32	75,755.05	210, 386, 2
Pacific		119,387.40	380,629,8
Electrical		188, 237. 63	595, 217. 1
Dredging.	980 145.00	232, 250. 75	747,894.2
Municipal engineering.	1,249,780.95	355,897.90	893,973.0
Balboa incinerator	15,696.55	0.00,007700	15,696.5
Office engineer	49,617.51	48,486.49	1,131.0
Office engineer Meteorology and hydrography	28, 180. 93	22,802.53	5,378.
Surveys	39, 277.53	24,038.52	15,239.0
Maintenance, Gatun dam	39, 233.88	9, 240.06	29,993.8
Total, engineer of maintenance	3,971,545.69	1,076,006.33	2,895,539.

Table No. 35.—Statement of audited pay rolls on Isthmus during fiscal year 1920—Continued.

Port captain—  Ralboa   353,522.91   163,853.45   189,669   Cristobal   333,185.12   174,234.51   158,950   Lighthouse division   51,152.64   16,353.28   31,799     Total, marine division   745,783.14   362,138.71   383,644     Mechanical division—  Ralboa   3,002,003.76   310,438.03   2,691,565   Cristobal   60,249.32   791,967     Total, mechanical division   3,854,221.07   370,687.35   3,483,533     Supply department—  Quartermaster—  Office   39,525.28   39,525.28   Storchouses   343,019.16   192,241.24   150,777     District quartermaster   905,883.30   235,884.77   669,998   Printing plant   88,644.64   21,870.24   66,744   Fuel-oil plants   50,064.19   9,885.59   40,178     Total, quartermaster   1,427,106.57   499,407.12   927,699   Subsistence   220,790.19   85,188.36   135,601     Total, quartermaster and subsistence   1,647,896.76   584,595.48   1,063,301     Accounting—  Auditor   382,107.25   381,369.17   738   Paymaster   249,632.33   40,532.33   40,532.33   Collector   36,921.71   705,207.20   Injury and death—  Old act   1,073.95   348,873.51   1,651,413   Fortifications   1,073.95   176,094   176,094   178,000   176,094   177,000   176,094   177,000				
Marine division—Office         \$7,922.47         \$7,697.47         \$225           Port captain—Ralboa         353,522.91         163,853.45         189,669           Cristobal         333,185.12         174,234.51         158,950           Lighthouse division         51,152.64         16,353.28         34,799           Total, marine division—Balboa         3,002,003.76         310,438.03         2,691,565           Cristobal         852,217.31         60,249.32         791,967           Total, mechanical division         3,854,221.07         370,687.35         3,483,533           Supply department—Quartermaster—Office         39,525.28         39,525.28         39,525.28         39,525.28         150,777           District quartermaster         965,883.30         235,884.77         669,998         25,729         166,744         150,777         669,998         150,064.19         9,885.59         40,178         499,407.12         927,699         176,694         176,792.24         40,178         499,407.12         927,699         186,744         176,792.44         40,178         176,691         176,691         176,691         176,691         176,691         176,691         176,691         176,691         176,691         176,691         176,691         176,694		Total.	Salaries.	Wages.
Office   \$7,922.47   \$7,697.47   \$225   Port captain—			_	
Ralboa	Office	\$7,922.17	\$7,697.47	\$225.00
Total, marine division	Port captain— Balboa	353 522 91	163 853 45	189 669 46
Mechanical division—       3,002,003.76       310,438.03       2,691,565         Cristobal.       852,217.31       60,249.32       791,967         Total, mechanical division       3,854,221.07       370,687.35       3,483,533         Supply department—Quartermaster—       39,525.28       39,525.28       39,525.28       39,525.28       39,525.28       39,525.28       150,777         District quartermaster       905,883.30       235,884.77       669,998       669,998       88,614.64       21,879.24       669,998       98,855.59       46,744       669,998       98,855.59       40,178       70,106.17       99,885.59       40,178	Cristobal Lighthouse division	333, 185, 12 51, 152, 64	174, 234.51 16, 353.28	158, 950. 61 34, 799. 36
Balboa       3,002,003,76       310,488.03       2,691,565         Cristobal       852,217.31       60,249.32       791,967         Total, mechanical division       3,854,221.07       370,687.35       3,483,533         Supply department—	Total, marine division	. 745,783.14	362, 138. 71	383, 644, 43
Total, mechanical division 3,854,221.07 370,687.35 3,483,533  Supply department— Quartermaster— Office 39,525.28 39,525.28 Storchouses 313,019.16 192,241.24 150,777 District quartermaster 905,883.30 235,884.77 669,998 Printing plant 88,614.64 21,879.24 66,744 Fuel-cil plants 50,064.19 9,885.59 40,178  Total, quartermaster 1,427,106.57 220,790.19 85,188.36 135,601.  Total, quartermaster and subsistence 1,647,896.76 584,595.48 1,063,301.  Accounting— Auditor 382,107.25 381,369.17 738. Paymaster 40,532.33 40,532.33 Collector 36,921.71  Total, accounting 459,523.33 40,532.33 Collector 36,921.71  Total, accounting 459,523.37 738. Fortifications 22,000,287.08 348,873.51 1,651,413. Fortifications 1,073.95 1,651,413. Fortifications 1,073.95 1,073.95 43,568.	Balboa	3,002,003.76	310, 438. 03 60, 249. 32	2,691,565.73 791,967.99
Quartermaster—         39,525.28         39,525.28         39,525.28         39,525.28         39,525.28         39,525.28         39,525.28         39,525.28         39,525.28         39,525.28         30,777         20,777         20,777         20,777         20,777         20,777         20,777         20,777         20,777         21,772.24         666,794         666,794         666,744         70,772         40,178         40,178           Total, quartermaster         1,427,106.57         499,407.12         927,699         927,699         98,5188.36         135,601           Total, quartermaster and subsistence         1,647,896.76         584,595.48         1,063,301           Accounting—         382,107.25         381,369.17         738           Paymaster         40,532.33         40,532.33         40,532.33           Collector         36,921.71         36,921.71           Total, accounting         459,522.79         348,873.51         1,651,413           Fortifications         281,301.77         105,207.20         176,094           Injury and death—         1,073.95         47,325.35         3,756.55         43,568				3,483,533.72
Storehouses     313, 019.16     192, 241. 24     150, 777       District quartermaster     905, 883, 30     235, 884, 77     669, 998       Printing plant     88, 614. 64     21, 870. 24     66, 744       Fuel-eil plants     50, 064. 19     9, 885, 59     40, 178.       Total, quartermaster     1, 427, 106. 57     499, 407. 12     927, 699       Subsistence     220, 790. 19     85, 188. 36     135, 601.       Total, quartermaster and subsistence     1, 647, 896. 76     584, 595. 48     1, 063, 301.       Accounting—     382, 107. 25     381, 369. 17     738.       Paymaster     40, 532. 33     40, 532. 33     40, 532. 33       Collector     36, 921. 71     36, 921. 71     36, 921. 71       Total, accounting     459, 612. 29     458, 823. 21     738.       Fortifications     281, 301. 77     105, 207. 20     176, 694.       Injury and death—     1, 073. 95     47, 325. 35     3, 756. 55     43, 568.	Quartermaster—		<del></del>	
Printing plant.       88, 614, 64       21, 870, 24       66, 744.         Fuel-oil plants.       50, 664, 19       9, 885, 59       40, 178.         Total, quartermaster.       1, 427, 106, 57       499, 407, 12       927, 699.         Subsistence.       2, 699, 790, 19       85, 188, 36       135, 601.         Total, quartermaster and subsistence.       1, 647, 896, 76       584, 595, 48       1, 063, 301.         Accounting—       382, 107, 25       381, 369, 17       738.         Paymaster.       40, 532, 33       40, 532, 33       40, 532, 33       40, 532, 33       53, 921, 71	Office	39,525.28	39,525.28	150 777 99
Printing plant.     88, 614, 64     21, 870, 24     66, 744.       Fuel-oil plants.     50, 664, 19     9, 885, 59     40, 178.       Total, quartermaster.     1, 427, 106, 57     499, 407, 12     927, 699.       Subsistence.     220, 790, 19     85, 188, 36     135, 601.       Total, quartermaster and subsistence.     1, 647, 896, 76     584, 595, 48     1, 063, 301.       Accounting—     382, 107, 25     381, 369, 17     738.       Paymaster.     40, 532, 33     40, 532, 33     40, 532, 33     40, 532, 33       Collector.     36, 921, 71     36, 921, 71     36, 921, 71       Total, accounting.     459, 661, 29     458, 823, 21     1, 631, 413.       Fortifications.     2, 000, 287, 08     348, 873, 51     1, 651, 413.       Fortifications.     281, 301, 77     105, 207, 20     176, 094.       Injury and death—     1, 073, 95     1, 073, 95     1, 073, 95       Old act     1, 073, 95     1, 073, 95     1, 073, 95       New act     47, 325, 35     3, 756, 55     43, 568.	District quartermaster	905,883.30	235, 884, 77	669, 998.53
Total, quartermaster and subsistence. 1,647,896.76 584,595.48 1,063,301.  Accounting— Auditor. 382,107.25 381,369.17 738. Paymaster. 40,532.33 40,532.33 40,532.33 Collector. 36,921.71 36,921.71  Total, accounting. 459,561.29 458,822.21 2,000,287.08 348,873.51 1,651,413. Fortifications. 281,301.77 105,207.20 176,094. Injury and death— Old act. 1,073.95 A7,325.35 3,756.55 43,568.	Printing plant. Fuel-oil plants.	. 88,614.64 50,064.19	21,879.24 9,885.59	66, 744. 40 40, 178. 60
Accounting—     382, 107. 25     381, 369. 17     738.       Auditor.     40, 532. 33     40, 532. 33     40, 532. 33       Collector.     36, 921. 71     36, 921. 71       Total, accounting.     459, 561. 29     458, 823. 21     738.       Building.     2, 000, 287. 08     348, 873. 51     1, 651, 413.       Fortifications.     281, 301. 77     105, 207. 20     176, 094.       Injury and death—     1, 073. 95     1, 073. 95     1, 073. 95       New act     47, 325. 35     3, 756. 55     43, 568.	Total, quartermaster Subsistence	. 1,427,106.57 220,790.19	499, 407. 12 85, 188. 36	927, 699. 45 135, 601. 83
Auditor 382,107.25 381,369.17 738. Paymaster. 40,532.33 40,532.33 Collector. 36,921.71 36,921.71  Total, accounting. 459,561.29 458,823.21 738. Building. 2,000,287.08 348,873.51 1,651,413. Fortifications. 281,301.77 105,207.20 176,094. Injury and death— 1,073.95 1,073. New act 47,325.35 3,756.55 43,668.	Total, quartermaster and subsistence	. 1,647,896.76	584,595.48	1,063,301.28
Paymaster.     40,532.33     40,532.33     40,532.33       Collector.     36,921.71     36,921.71       Total, accounting.     459,561.29     458,823.21     738.       Building.     2,000,287.08     348,873.51     1,651,413.       Fortifications.     281,301.77     105,207.20     176,094.       Injury and death—     1,073.95     1,073.95     1,073.95     1,073.95       New act     47,325.35     3,756.55     43,568.	Accounting-	800 107 07	901 900 17	700.00
Injury and death— Old act. New act.  1,073.95 47,325.35 3,756.55 43,568.	Paymaster	. 40,532.33	40,532.33	738.08
Injury and death— Old act. New act.  1,073.95 47,325.35 3,756.55 43,568.	Total, accounting	459,561.29	458,823.21	738.08
Old act.     1,073.95     1,073.       New act.     47,325.35     3,756.55     43,568.	Fortifications.  Injury and death—	. 281,301.77	348,873.51 105,207.20	1,651,413.57 176,094.57
Total, operation and maintenance	Old act	1,073.95 47,325.35	3,756.55	1,073.95 43,568.80
	Total, operation and maintenance	13,506,964.35	3,783,753.54	9,723,210.81
Construction and equipment:		20 205 41	00 007 41	
Joint commission.	Joint commission. Special attorney and land office.	18, 262. 16	39, 265. 41 18, 262. 16	
Total, construction and equipment	Total, construction and equipment	57,527.57	57,527.57	
Civil government:         38,736.43           Civil affairs.         38,736.43	Civil offgirs	38 736, 43	38, 736, 43	
Posts	Posts.	99,753.03	99, 753.03	
Police and prisons 277, 40.51 277, 40.51 Tire protection 80 138 24 80 138 24	Police and prisons	80 138 24	80 138 24	
Schools 131,389.13 131,389.13	Schools.	131, 389.13	131,389.13	
District court.         19,543.67         19,543.67           District attorney.         7,631.33         7,631.33	DISTRICT COURT	19,543.67	19,543.67	
Marshal 7, 100.00 7, 100.00	Marshal	7,100.30	7,100.00	
Magistrate courts	Magistrate courts	13, 125.32	13, 125.32	
Constation				
Office         19,610.25         10,010.25         10,010.25           Medical store         11,214.60         10,651.76         1,162.           Ancon Hospital         341,368.42         282,127.11         59,231.           Colon Hospital         53,606.62         47,666.66         5,939.           Contact Topics Mexical         12,466.46         12,466.46         12,466.46	Office	10,010.25	10,010.25	
Medical Store 11,214,60 10,651.76 1,162. A neon Hospital 341 258 14 282 127.11 59 231.	A neon Hospital	341 358 14	282 127.11	1,162.84 59 231.03
	Colon Hospital	53,006.62	47,066.66	1,162.84 59,231.03 5,939.96
Santo Tomas Hospital.       12,460.46       12,460.46       12,460.46         Palo Seco Leper Asylum.       16,221.70       7,454.21       8,767.	Santo Tomas Hospital	12,460,46	12,460.46	8,767.49
10,010.25	Dispensaries.	31,922.80	31,267.80	655.00
Quarantine— Office. 680.58 680.58		690 50	680 50	
Office. 680.58 680.58 81boa 18,713.26 14,230.73 4,482.5		18,713,26	14, 230, 73	4,482.53 4,234.65
Balboa     18,713.26     11,230.73     4,482.       Cristobal     21,387.80     20,153.15     4,234.       Bocas del Toro     1,915.99     1,915.99     1,915.99	Cristobal	21,387.80 1,915.99	20, 153. 15 1, 915. 99	4,234.65
		45,697.63	36,980,45	8,717.18
Corozal farm.     45,697.63     36,980.45     8,717.       Corozal farm.     18,166.09     4,655.52     13,510.4       Corozal Asylum.     48,091.77     39,392.08     8,699.0		18, 166, 09	4,655.52	13,510.57

Table No. 35.—Statement of audited pay rolls on Isthmus during fiscal year 1920—Continued.

	Total.	Salaries.	Wages.
Sanitation—Continued.  Health office— Panama. Colon. Zone sanitation.  Tota, sanitation. Grand total.	\$106, 481.51	\$36,582.20	\$69, 899. 31
	100, 295.73	40,733.44	59, 562. 29
	144, 487.36	30,148.82	114, 338. 54
	939, 414.66	588,930.76	350, 483. 90
	15, 181, 284.75	5,107.590.04	10, 073, 694. 71

Table No. 36.—Statement of accounts receivable registered during the fiscal year ended June 30, 1920.

Month.	Number of bills regis- tered.		Total.		gainst the Panama Railroad.	Against the Republic of Panama.	Against other departments of United States Government.	Against steamship companies.
1919. July August. September October. November December.	2,020 2,082 2,034 2,268 2,173 2,642	2, 0 1, 9 2, 0 2, 1	024, 949, 45 066, 224, 14 987, 329, 54 656, 672, 26 132, 095, 25 498, 044, 81		282,097.37 314,198.62 373,026.33 331,721.23 296,082.07 364,121.80	\$15,724.18 15,975.58 16,602.10 16,978.26 15,827.93 17,922.27	\$194,535.44 229,714.39 155,193.63 225,588.62 127,325.33 156,078.49	126, 854. 69 315, 058. 02 236, 332. 87 421, 971. 74 489, 361. 91 465, 870. 17
January. February. March April May. June.	2,742 2,480 2,639 2,652 2,543 2,550	2, 5 2, 6 2, 6 2, 5	526, 202. 53 224, 944. 83 571, 329. 49 547, 575. 65 569, 154. 60 550, 209. 09		386,100.41 387,497.78 320,758.79 502,618.20 378,083.76 387,391.17	20,410.50 18,687.45 17,738.96 36,407.14 19,106.18 25,811.39	158, 574. 37 168, 310. 43 168, 996. 39 216, 957. 04 213, 741. 33 -319, 924. 91	554,266.33 373,379.74 768,052.80 578,117.71 501,433.17 541,032.54
Total Total for year ended June 30, 1919	28, 825 24, 210		8,654,731.64 5,272,815.50		323, 697. 53 305, 595. 36	237, 191. 94 204, 682. 21	2,334,940.37 3,352,891.52	5,371,731.69 3,239,957.55
Month.	Agains other individu and compani	als	s For pay r		Other collections.	For various collections, hospitals and messes.	Tolls.	Repay to appropriations.
July. August. September October. November December.	\$414, 246 105, 157 125, 710 513, 726 140, 058 241, 920	. 83 . 28 . 58 . 89	\$446, 452. 470, 703. 485, 042. 479, 750. 492, 156. 348, 369.	. 48 . 11 . 62 . 74	\$609.00 12.50 50.00 189.13	\$5,944.42 5,956.76 6,378.23 5,438.34	\$538, 485. 16 609, 446. 96 588, 993. 99 661, 307. 74 571, 282. 38 891, 375. 70	\$1,039,302.60 985,661.20 913,143.44 1,506,550.48 1,065,254.88 1,251,899.89
January. February. March. April. May May June	315, 932. 181, 496. 203, 319. 169, 966. 245, 030. 182, 539.	37 19 90 69	424, 146, 372, 454, 357, 047, 328, 123, 369, 262, 375, 294,	95 53 95 12		16,905.00 6,393.53 7,569.46 8,009.81 6,946.68	766, 771, 49 706, 213, 11 829, 022, 30 807, 815, 25 834, 487, 54 711, 268, 18	1,424,971.89 1,146,176.77 1,357,500.99 1,492,307.41 1,354,989.94 1,454,799.90
Total Total for year ended June 30, 1919	2,839,106. 3,256,972.		4,948,804. 4,474,814.		860.63 6,925.16	81,928.30 64,699.24	8,516,469.80 6,181,637.43	14,992,559.39 14,393,511.72

Table No. 37.—Commissary books issued, fiscal year 1920. COUPON BOOKS ISSUED ON PAY ROLL DEDUCTION.

3645	\$2.50	silver.	ver. \$5 silver.			silver.
Month.	Number.	Value.	Number.	Value.	Number.	Value.
1919.						
July	21,553	\$53,882.50	ļ			
August	21,687	54, 217. 50				
September	20,687	51,717.50				
Jetoper	18,875	47, 18750				
November	20,884	52,210.00				
December	20, 129	50,322.50				
1920.						
January	10, 555	26,387.50				
February.	7, 131	17, 827.50				
March	6,026	15,065.00	12,378	\$61,890.00		
April	5,750	14,375.00	42,381	211,905.00	9, 137	\$68,527.5
May	2,240	5,600.00	45,903	229, 515.00	10,612	79,590.0
June	2,302	5,755.00	44,867	224,335.00	12,918	96,885.0
Total	157, 819	394, 547.50	145, 529	727,645.00	32,667	245,002.5

Mondi	\$5	gold.	\$15	Total	
Month.	Number.	Value.	Number.	Value.	value.
July August September October November December	52,314 51,072 52,906	\$243, 305, 00 261, 570, 00 255, 360, 00 264, 530, 00 236, 410, 00 310, 365, 00	8,114 8,569 9,169 9,709 10,688 12,758	\$121,710.00 128,535.00 137,535.00 145,635.00 160,320.00 191,370.00	\$418, 897.50 444, 322.50 444, 612.50 457, 352.50 448, 940.00 552, 057.50
January 1920. February March April May June Total.	54,329 34,139 1,521	286, 320.00 271, 645.00 170, 695.00 7, 605.00 7, 630.00 8, 370.00 2, 323, 805.00	11, 208 11, 410 11, 751 12, 073 11, 839 11, 819	168, 120.00 171, 150.00 176, 265.00 181, 095.00 177, 585.00 177, 285.00	480, \$27.50 460, 622.50 423, 915.00 483, 507.50 499, 920.00 512, 630.00 5, 627, 605.00

## COUPON BOOKS SOLD FOR CASH.

	\$2.50 silver.		\$5 si	lver.	\$7.50 silver.	
Month.	Number.	Value.	Number.	Value.	Number.	Value.
1919.						
July	3,312	\$8,280.00		1	1	
August	3,244	8, 110.00				
September	3,268	8, 170.00				
October	2,837	7,092.50				
November	2,656	6,640.00				
December	2,859	7,147.50				
1920.						
January	2,235	5,587.50				
February	2,306	5,765.00				
Mareh	2,160	5,400.00	26	\$130.00		
April	3, 120	7,800.00	706	3,530.00	204	\$1,530.00
May	3, 162	7,905.00	1,631	8, 155.00	266	1,995.00
June	3, 496	8,740.00	1,819	9, 095.00	248	1,860.00
Total	34,655	86,637.50	4,182	20,910.00	718	5,385.00

Table No. 37—Commissary books issued, fiscal year 1920—Continued.
COUPON BOOKS SOLD FOR CASH—Continued.

No. 4h	\$5	gold.	\$15	gold.	Total	Surcharge to steam-	
Month.	Number.	Value.	Number.	Value.	value,	ship com- panies.1	
July. 1919. August September October November December.	11, 935 12, 629 11, 891 12, 070 10, 755 14, 413	\$59,675.00 63,145.00 59,455.00 60,350.00 53,775.00 72,065.00	5, 478 5, 962 5, 692 5, 916 5, 567 7, 881	\$82, 170. 00 89, 430. 00 85, 380. 00 88, 740. 00 83, 505. 00 118, 215. 00	\$150, 125.00 160, 685.00 153, 005.00 156, 182.50 143, 920.00 197, 427.50	\$251, 50 298, 75 257, 50 256, 25 271, 50 372, 50	
January. February. March. April. May June. Total.	12,093 12,018 13,632 13,083 12,429 12,254	60, 465.00 60, 090.00 68, 160.00 65, 415.00 62, 145.00 61, 270.00 746, 010.00	6,590 7,020 8,150 8,332 8,265 7,873	98, 850.00 105, 300.00 122, 250.00 124, 980.00 123, 975.00 118, 095.00	164, 902. 50 171, 155. 00 195, 940. 00 203, 255. 00 204, 175. 00 199, 060. 00 2, 099, 832. 50	297.50 220.00 316.25 250.00 358.75 272.50 3,423.00	

 $<sup>^125~\</sup>rm per~cent$  surcharge added on coupon books sold to steamship companies for use in purchasing supplies for vessels—in effect Apr. 1, 1917.

Table No. 38.—Commissary coupons honored at commissaries, hotels, messes, nursery, marine equipment, clubhouses, and Army and Navy Y. M. C. A. during the fiscal year ended June 30, 1920.

Month.	Commissary.	Hotels and messes.	Ancon nursery.	Marine equip- ment.	Panama Canalclub- houses.	Army and Navy Y.M.C.A.	Total value.
1919. July. August. September. October. November. December.		\$48, 924. 80 50, 569. 03 51, 279. 58 54, 498. 99 52, 412. 49 57, 737. 88	\$116.35 109.56 120.95 153.52 92.34 154.27	\$68. 76 59. 32 63. 51 58. 78 50. 00 41. 18	\$6,739.54 6,558.17 6,578.04 7,700.06 7,991.80 8,877.74	\$2,633.30 2,891.21 1,719.75 2,846.04 1,325.56 2,243.30	\$566, 199. 51 602, 910. 52 586, 028. 54 622, 161. 39 582, 741. 77 734, 269. 93
1920. January. February. March April May June. Total.	532, 294. 94 562, 455. 79 622, 750. 33	58, 303. 50 55, 115. 49 60, 022. 74 61, 850. 47 61, 319. 63 59, 837. 21 671, 871. 81	161. 81 144. 16 102. 93 91. 63 96. 93 138. 04	66. 84 57. 75 47. 71 30. 98 39. 90 41. 67	9,016.65 8,841.43 8,488.43 9,723.39 10,821.43 10,131.50	1,349.13 1,336.64 3,174.50 1,282.40 1,877.65 2,144.72 24,824.20	667, 259, 97 597, 790, 41 634, 292, 10 695, 729, 20 706, 423, 23 687, 706, 57 7, 683, 513, 14

Table No. 39.—Meal tickets issued to silver employees for which collections were made on pay rolls.

Month	10 ce	ents.	30 ce	ents.	40 0	Total	
Month.	Number.	Value.	Number.	Value.	Number.	Value.	value.
July	112 36 36	\$20.10 11.20 3.60 3.60	588 230 264 322 1,337 1,461	\$176.40 69.00 79.20 96.60 534.80 584.40	17, 761 16, 671 13, 824 13, 290 7, 094 7, 296	\$7, 104. 40 6, 668. 40 5, 529. 60 5, 316. 00 3, 547. 00 3, 648. 00	\$7, 300. 90 6, 748. 60 5, 612. 40 5, 416. 20 4, 081. 80 4, 232. 40
1920. January February March April May June			925 259 245				4,085.10 2,871.50 3,546.10 2,434.50
Total		38.50	6,625	2,509.60	99,872	43,781.40	46, 329. 50

Table No. 40.—Balances of miscellaneous trust funds on deposit with collector, June 30, 1920.

Postal savings funds.	\$459.00
Money order funds	702 924 40
Trust funds. Clubhouse funds.	6,950,90
Clubhouse funds	53,803.17
Interest	16, 620. 49
Total	780,757.96

Table No. 41.—Statement of money orders issued and paid by the Canal Zone and Canal Zone orders paid by other administrations, fiscal years 1907 to 1920, inclusive.

Yee-		money orders sued.	Money orders paid by Canal Zone post offices.				
Year.	Number.	Value.	Marti- nique.	Costa Rica.	United States.	Canal Zone.	
1907 1908 1909 1909 1910 1911 1912 1913 1914 1915 196 1917 1918 1919 1919 1919	84, 441 153, 457 180, 389 207, 220 214, 780 227, 680 238, 316 198, 828 150, 906 147, 012 146, 421 143, 250 118, 539	\$2,369,031.49 4,686,684.98 5,166,749.46 5,228,553.60 5,304,906.60 4,915,707.26 4,983,624.13 4,029,364.13 2,130,918.71 2,138,328.69 1,963,218.27		\$85, 70 191, 95 375, 38 637, 45 445, 19 1, 318, 12 507, 00 255, 40 946, 47	\$18, 257, 90 33, 378, 45 52, 686, 22 60, 470, 77 66, 696, 58 60, 298, 69 89, 447, 95 88, 533, 43 109, 204, 82 129, 392, 20 120, 054, 75 211, 461, 81 325, 954, 47 290, 493, 63	\$208, 165, 4 1, 017, 750, 9 1, 492, 144, 7 1, 331, 568, 2 1, 337, 915, 568, 2 1, 280, 397, 8 881, 728, 7 776, 265, 6 431, 001, 2 289, 011, 7 231, 467, 6 224, 057, 9 209, 704, 7 195, 390, 5	
Total	2, 317, 769	50, 332, 439. 81	9,952,56	4,762.66	1,686,341.67	9, 906, 573. 5	

### DEPOSIT ORDERS ISSUED IN LIEU OF POSTAL SAVINGS.

1915. 1916. 1917. 1918. 1919. 1920.	24, 054 27, 054 24, 772 22, 118	1,101,190.00 1,481,845.00 1,244,335.00 1,145.460.00				1, 103, 430, 00 1, 136, 115, 00 1, 441, 225, 00 1, 225, 025, 00
Total	136, 233	7, 191, 625. 00				6, 671, 555. 00
Grand total	2, 454, 002	57, 524, 064. 81	\$9,952.56	\$4,762.66	\$1,686,341.67	16, 578, 128, 59

	Car	nal Zone moi	ney orders paid	i by—	Cash remitted to United
Year.	Marti- nique.	Costa Rica.	United States.	Canal Zone.	States Post Office De- partment.
1907 1908 1909 1910 1911 1911 1912 1913 1914 1915 1916 1917 1918 1919 1920  Total Grand total	\$2, 267, 60 6, 022, 08 8, 176, 95 9, 646, 65 11, 684, 18 6, 183, 64 5, 979, 45 3, 500, 97 2, 446, 50 2, 995, 11 1, 412, 00		2, 875, 719. 61 3, 583, 419. 57	<u> </u>	\$1, 884, 000. 00 3, 932, 000. 00 3, 392, 000. 00 3, 535, 000. 00 4, 422, 249. 17 3, 589, 000. 00 3, 401, 000. 00 3, 401, 000. 00 3, 053, 407. 08 2, 125, 043. 89 1, 676, 500. 00 1, 655, 000. 00 1, 501, 000. 00 38, 419, 200. 14

<sup>1</sup> Deposit money orders paid by Canal Zone included.

### SUMMARY.

Total Canal Zone orders issued Total Canal Zone orders paid	\$57, 524, 064.*81 56, 808, 190, 52	Money order funds: Cash on deposit with collector, Panama Canal \$702,924,40
Total Canal Zone orders out- standing unpaid	715, 874. 29	Cash due from postmasters. \$24,167.74 Less amount of fees in-
Zone.  Due Costa Rica by the Canal Zone.  Due Martinique by the Canal Zone.  Overages.	10, 804. 75 268. 03 49. 00 20. 05	eluded
	727,016.12	727,016.12

Table No. 42.—Postal Service—Statement showing the monthly money order business of the Canal Zone postal service during the fiscal year ended June 30, 1920.

Month.	issued	ney orders d, including sit money orders.	Interest paid on deposit	Canal		oaid by the ost offices.	Canal Zone money paid by—		
	Num- ber.	Amount.	money orders.	United States.	Costa Rica.	Canal Zone.1	Marti- nique.	Costa Rica.	United States.
1919. July August September October November December	9, 081 10, 139 10, 013 10, 122 10, 642 13, 250	244, 573, 64 241, 694, 28 229, 863, 09	956. 24 838. 73 422. 11 356. 60	21,043.98 19,600.64 18,194.15	50.00	126, 304. 91 109, 001. 60 75, 740. 52 76, 788. 63	\$751.50 117.00 22.00	\$263. 00 249. 00 175. 60	\$130, 240, 3 159, 906, 4 136, 739, 6 129, 505, 7 125, 983, 3 140, 343, 0
1920. January February March April May	10,616 9,945 11,721 9,828 9,753 10,012	275, 802. 09 327, 360. 21 294, 028. 74	421.76 825.40 779.71	21,838.08 26,867.82 32,252.84 24,197.75	50.25 18.00 6.25 104.06		135. 00 68. 50 42. 00 32. 00 17. 00	348. 00 778. 50	166, 973. 8 157, 456. 4 256, 608. 7 159, 693. 0 138, 685. 2 175, 267. 0
Total	125, 122	3,198,989.98	7,987.08	290, 493. 63	946.47	1,238,470.53	1,412.00	1,814,10	1,877,402.8

<sup>&</sup>lt;sup>1</sup> Including deposit money orders.

Table No. 43.—Postal Service—Statement of audited revenues, fiscal years 1907 to 1920, inclusive.

Table No. 44.—Postal Service—Statement of postal revenues, fiscal year ended June 30, 1920.

1919.   S   August   1   1   1   2   2   2   2   2   2   2	\$63. \$4 155. 39 153. \$7 251. 66 63. 28	Money- order fees. \$695. 38 809. 95 822. 54 796. 65 \$32. 84	Interest on money-order funds.  \$2,614.21 866.21	\$6, 175. 13 5, 614. 26 6, 087. 30 6, 103. 35	8581. 50 48. 20 1, 326. 65	News-paper postage. \$178.42 139.32 164.51	7,633.3 8,554.8
July     8       August     1       September     1       October     2       November     2       December     1	155, 39 153, 87 251, 66 63, 28	809. 95 822. 54 796. 65	866. 21 4, 965. 78	5, 614. 26 6, 087. 30	48. 20 1, 326. 65	139.32 164.51	\$10,308.4 7,633.3 8,554.8
	171.62	1,093.23	1, 027. 55 785. 99	6, 198. 60 8, 883. 71	656. 95 22. 50 1, 489. 45	135. 83 132. 73 180. 20	12,910.2 8,277.5 12,604.2
February       1         March       1         April       2         May       2	185. 52 174. 73 172. 88 200. 09 201. 57 157. 19	829. 06 785. 09 1, 033. 28 827. 97 821. 67 859. 93	2, 288. 10 1, 273. 58 1, 221. 60 4, 557. 95 1, 246. 22 1, 294. 19	7, 905. 41 7, 429. 44 8, 241. 26 7, 543. 59 7, 863. 27 9, 051. 40	539. 75 6. 25 1, 428. 00 577. 65 25. 95 2, 073. 70	132. 21 140. 63 190. 13 137. 40 123. 71 127. 44	11, 880. 0 9, 809. 7 12, 287. 1 13, 844. 6 10, 282. 3 13, 563. 8

Table No. 45.—Postal Service—Statement of postal-savings payments and deposit money-order transactions (in lieu of postal-savings system) for fiscal year ended June 30, 1920.

		-savings icates.	Deposit money orders.			
Month.	Balanee July 1, 1919.	Paid.	Balanee July 1, 1919.	Issued.	Paid.	
1919. July				\$84,540.00	\$9 <u>4</u> , 715. 0	
August September Detober November				78,910.00 86,790.00	107, 185 ( 94, 175 ( 61, 965 ( 63, 000 (	
December 1920.				78,700.00	73, 320.	
anuary February March				117, 540. 00	56, 255. ( 63, 400. ( 99, 440. (	
April May une				108, 495. 00 96, 680. 00	95, 630. 0 119, 695. 0 114, 300. 0	
Balance unpaid June 30, 1920  Total		509.00	419,925.00	1,143,225.00		

Table No. 46.—Statement of income, bureau of clubs and playgrounds, July 1, 1919, to June 30, 1920.

	Ancon.	La Boca.	Balboa.	Pedro Miguel.	Paraiso.	Gatun.	Gatun, silver.
Soda fountains Cigars and candy Salable merchandise	25,062 60	\$9,752.32 11,273.97	\$41, 229. 47 34, 855. 14 19, 266. 65	\$4,449.64 3,869.39 234.31	5,027.38	\$10,520.13 8,328.34 1,734.61	5,443.04
Moving pictures Billiards. Bowling	4,183.30 1,741.42	599.65 442.72 63,90	20,976.67 2,000.04 1,892.40	2,069.00 345.40 384.22	708.91	2, 878. 38 447. 56 845. 43	984.65 1,350.43
Entertainments	746.15 167.50	1.00	4, 136. 20 78. 00	217. 10 27. 75	7.75	589.65	133.60
Playgrounds Swimming pool Tennis clubs	154. 75	613.75	90.00 6,624.98 490.60	87. 50	7,00	232.00	
Library deposits.  Rentals and interest.  Membership.	36.00	7.50 182.00	3, 60 467, 50 36, 00	59.50	. 50 120.00	29.00 60.00	
Activities. Supplies and equipment. Maintenance and general	2. 15 6. 79	151.95 14.81	137. 82 135. 90	31.15		22.64	22.50
expenses	13.02	1.15	87. 19	11 774 00	10 071 00	1.15	-
10tal	60, 273. 02	23, 118, 06	132, 598. 16	11,774.96	12,971.86	25,679.86	15, 106. 28
	Cristobal.	Cristobal, silver.	Red tank.	Balboa boat- house.	Bureau clubs and play- grounds stock.	General secre- tary.	Total.
Soda fountains Cigars and candy Salable merchandise Moving pictures Billiards. Bowling.	18,370.58 3,210.92 2,724.25 1,868.39 1.374.18	\$9,367.65 21,235.62 830.65 1,510.67 66.90					\$132, 237. 49 138, 073. 10 31, 136. 95 36, 747. 87 11, 261. 04 5, 992. 90
Entertainments Tournaments Playgrounds Swimming pool		1,338.07	81.20		• • • • • • • • • • • • • • • • • • • •		6,059.45 282.00 2,752.06
Tennis clubs Library deposits	$234.25 \\ 3.20$	29.00 15.50	. 50				6, 624. 98 1, 248 44 56. 40
Rentals and interest  Membership Activities	128. 49 16 00 37. 20	146.83 2.00	9.00	930. S0 448. 25	• • • • • • • • • • • • • • • • • • • •		4,111.90 90.00 862.66
Bureau clubs and play- grounds stock					847, 452.07		47, 452.07 157.50
Maintenance and general expenses. Boat dues				5.45 964.90		• • • • • • • • • •	130.56 964.90
Yacht Club surplus				876.40			876.40
Total	45, 893. 99	34, 542. 89	10,541.13	5,722.22	47, 452. 07	1,534.17	427, 118.67

Table No. 47.—Statement of expenses, bureau of clubs and playgrounds, July 1, 1919, to June 30, 1920.

Soda fountain								
Cigars and eandy.         20,524,81         9,449,87         2',230,41         3,501.57         4,193,13         7,454,76         4',88           Salable merchandise.         4,040,12         17,339,91         454,58         2,362,19         61,56         285,77         3,501.57         7,494,76         4',88           Billiards.         1,739,91         454,58         2,362.19         61,56         285,77         799,91         1,790,97         799,91         1,71         799,91         1,71         790,92         1,72         1,72         1,72         1,72         1,72         1,72         1,72         1,72         1		Ancon.	La Boca.	Balboa.		Paraiso.	Gatun.	Gatun silver.
Moving pictures	Cigars and eandy	20,524.81		\$41,378.47 2*,230.41 17,334.54	3,501.57	\$5, 455. 52 4, 193. 13	\$11,373.59 7,454.76 1,599.07	\$5,546.27 4,875.73
Entertainments	Moving pictures	4,049.14 1,739.91	454, 58	15,559.66	2,097.40	285.57	3, 253, 90 799, 91	1,189.75 772.77
Playgrounds	Entertainments	711.65	1. 76	5, 108. 05	248, 77 14, 17	3. 15	639, 80	151.81
Sold fountain	Playgrounds Swimming pool	216, 14		7,429,93		155.11		
Books and periodicals.   336.47   129.05   384.14   187.80   99.15   2,246.97	Office help	821.49	140.00	979.06	518.75		776.00	45. 00
Refunds	Books and periodicals	336, 47	129.05	384.14	187.80	93.55	209, 97	94.55
Rentals	Refunds		6.50	3.00	7.50	.50	1.50	
Cristobal   Cristobal   Red silver   Red silver   Red solver   Red s	grounds stock	7. 75						
Cristobal   Cristobal   Silver   Cristobal   Red Tank   Balboa   boathouse   Stock   Clubs and play grounds   Stock   Stock			<del></del>		15, 358, 14			
Cristobal   Cristobal   Silver   Cristobal   Red Tank   Balboa   boathouse   Stock   Clubs and play grounds   Stock   Stock		1		1		1	1	1
Gigars and candy         16, 284, 84         17, 496, 16         3, 521, 06         539, 31         117, 0           Salable merchandise         3, 387, 31         1, 469, 25         28, 4           Moving pictures         2, 999, 29         1, 011, 86         886, 87         84, 20         32, 4           Billiards         1, 886, 23         762, 04         529, 87         10, 1         10, 1           Bowling         1, 495, 00         82, 79         34         6, 5         6, 5           Entertainments         370, 59         5, 78         39, 06         7, 2         2           Tournaments         26, 15         909, 21         75, 03         18, 00         7, 2           Playgrounds         26, 15         909, 21         75, 03         18, 00         7, 2           Tennis clubs         200, 18         21, 44         60, 00         26, 69         43, 5           Maintenance and general expense         11, 569, 62         972, 58         688, 69         1, 163, 92         434, 34         32, 6           Books and periodicals         275, 13         129, 27         108, 56         10, 74         173, 97         12, 90           Refunds         14, 53         5, 50         50         50		Cristobal.			boat-	clubs and play- grounds	General	Total.
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$								\$129, 402. 33
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Salable merchandise	3,387.31	1,011.86	886. 87	1 469 25			117, 071. 65 28, 476. 87 32, 471. 40
Tournaments         2         2         2         2         2         5         909.21         75.03         18.00         7,4         25.5         5         5         7,4 <td>BilliardsBowling</td> <td>1,856.23 1,495.00</td> <td>82. 79</td> <td>. 34</td> <td></td> <td></td> <td></td> <td>10, 182. 63 6, 551. 55</td>	BilliardsBowling	1,856.23 1,495.00	82. 79	. 34				10, 182. 63 6, 551. 55
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Tournaments	26, 15		75. 03	İ			7, 280, 42 225, 55 2, 571, 69 7, 447, 93
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Tennis clubs Office help	. 200.18						1,004.08 4,565.51
Supplies and equipment     3, 200. 29     5. 26     110. 74     173. 97     13, 2       Refunds     14. 53     5. 50     50     50     50     50       Activities     434. 12     146. 15     103. 13     436. 24     75. 00     4,6	pense						1 10 00	32,693.54 1,960.49
	Refunds	14. 53	5, 50	. 50				13, 201, 44 39, 53 4, 623, 25
grounds stock \$52,034.13 52,0	Burcau of clubs and play- grounds stock					\$52,034.13		52, 034. 13 14, 75
Boat dues 652.12 66	Boat dues				652.12			652, 12 129, 48
Total	Total	62,564.35	29, 791. 50	10, 479. 11	4, 782. 29	52, 034. 13	525, 54	452,600.34

Table No. 48.—Summary of income and expenses, bureau of clubs and playgrounds, July 1, 1919, to June 30, 1920.

	Ancon.	La Boca.	Balboa.	Pedro Miguel.	Paraiso.	Gatun.	Gatun silver.
Soda-fountain inventory, July 1, 1919	\$242.73	\$204.89	<b>\$</b> 586.96	\$193.98	\$243.71	\$264.51	<b>\$138.65</b>
Cigars and candy inventory, July 1, 1919	1,543.99	340.86	1, 135.87	219.92	345.01	280.97	122.52
Salable merchandise inventory, July 1, 1919	806.45		1,624.31	98.05	2.37	68.62	
Total expenditures, fiscal year 1920. Earnings, fiscal year 1920.	62,001.58 11,574.67	20, 860. 92 2, 280. 38	135, 721.14 11, 024.22	15, 358. 14 1 3, 436. 43	12,025.10 650.73	31,871.51 16,057.63	14, 585. 03 1, 040. 03
Total	63,020.08	23,687.05	138, 044. 06	12, 433.66	13, 266. 92	26, 427.98	15,886.23
Soda-fountain inventory, June 30, 1920 Cigars and candy inven-	340.96	190.73	566. 42	246.47	39.78	199.77	195. 80
tory, June 30, 1920 Salable merchandise in-	1,715.69	378, 26	3,004.77	333.68	255.28	407. 25	584.15
ventory, June 30, 1920	690.41		1,964.71	78.55		141.10	
Total income, fiscal year 1920	60, 273. 02	23, 118. 06	132, 508. 16	11,774.96	12,971.86	25, 679.86	15, 106. 28
Total	63,020.08	23,687.05	138,044.06	12, 433.66	13, 266. 92	26, 427. 98	15, 886, 23
~	Cristobal.	Cristobal silver.	Red tank.	Balboa boat- house.	Bureau of clubs and play- grounds stock.	General secre- tary.	Total.
Soda-fountain inventory, July 1, 1919 Cigars and candy inven-	\$305.68	*\$136.00		· · · · · · · · · · · · · · · · · · ·			\$2,317.11
tory, July 1, 1919 Salable merchandise inventory, July 1, 1919	823.83 427.95	351.38	\$45.04	<del>.</del>			5, 209. 39 3, 027. 75
Bureau of clubs and play- grounds stock inven- tory, July 1, 1919 Total expenditures, fiscal			- <b></b>		\$7, 294. 83		7, 294. 83
year 1920. Earnings, fiscal year 1920.	62, 564. 35 1 15, 468. 85	29, 791. 50 5, 026. 04	10, 479. 11 461. 35	\$4,782.29 1,186.89	52, 034. 13 710. 61	\$525.54 1,008.€3	452, 600. 34 1 15, 197. 14
Total	48,652.96	35, 304. 92	10, 985. 50	5,969.18	60, 039. 57	1, 534. 17	455, 252. 28
Soda-fountain inventory, June 30, 1920 Cigars and candy inven-	571.05	117.09	104.49	34.64			2,607.20
tory, June 30, 1920	1,624.02	644.94	339.88	103.05			9,390.97
Salable merchandise inventory, June 30, 1920. Bureau of clubs and play-	563.90			109. 27			3,547.94
grounds stock inven- tory, June 30, 1920 Total income, fiscal year					12, 587. 50		12, 587. 50
1920	45,893.99	34, 542. 89	10,541.13	5,722.22	47, 452. 07	1,534.17	427, 118.67
Total	48, 652. 96	35, 304. 92	10, 985. 50	5,969.18	60, 039. 57	1,534.17	455, 252. 28

<sup>1</sup> Loss.

Table No. 49.—Bureau of clubs and playgrounds, balance sheet, June 30, 1920.

Cash on hand:     Secretaries' balances	Surplus:  To June 30, 1919 \$78, 021. 25 Profit, current fiscal year 1 15, 197. 14  Accounts payable:  Audited vouchers 38, 374. 50 Panama Railroad Company (swimming pool). 200. 00  38,574. 50
Total	Total

1 Loss.

Table No. 50.—Statements of amounts paid under Executive order No. 1902, dated Mar. 20, 1914, as compensation to employees injured and on account of deaths of employees injured while directly engaged in actual work with The Panama Canal and Panama Railroad Company from July 1, 1919, to June 30, 1920, and a statement of amounts paid under act of Sept. 7, 1916, as compensation to employees injured while in the performance of duty with The Panama Canal and the Panama Railroad Company from July 1, 1919, to June 30, 1920.

•		ot. 7, 1916.	Payments under the Executive
	Injury.	Death.	order of Mar. 20, 1914, injury
Executive office.			
Motor cars, Panama Canal.			
Clubs and playgrounds	\$3,60		
Lock operation division	457.98	\$45.00	
Electrical division	511.90		
Dredging division	2,073.25	725, 49	
Municipal engineering	2, 932.47	229.68	
Office engineer and survey.	13.78		
Meteorology and hydrography	11.55		
Marine division	324.27		
Mechanical division	7, 108.06	765.32	
Quartermaster's division	567.96		
Storehouses	340, 94		
Printing plant	84.13		
Fuel-oil plant			
Subsistence.	92.01		
Accounting department	02.01		
Building division.	7,776.55	1, 493.11	
Fortification	252.99	145.98	
Health department	1 502.47	130,00	
ivilgovernment	1,502.47 900.77		
Civil government.  Land office and special attorney.	1		
Saint onice and special according	588, 66	•••••	
faintenance of way Panama Railroad stables and baggage transfer	000.00	•••••	
fotor cars, Panama Railroad.			
Coaling plants	3, 449, 42		
Iotels.	13.05		
Commissary division	1,015.11	452, 33	
Plantations	65.50	102.00	
attle steamers	154.23		
attle ranches	1,094.36	525.87	
oultry farm	1,001.00	020.01	
log farm.	3.00		
Pairy farm	24.33		
Railroad transportation	2,738.80		
Receiving and forwarding agencies	8,699.28	113.72	
Dains and back fills	28.43	110.72	
ferminals.	20. 10		\$1,073.9
m			
Total	42,828.85	4, 496, 50	1,073.9

Table No. 51.—Statement of amounts paid under the act of May 30, 1908, to employees as compensation on account of deaths of employees injured in the course of employment; amounts paid under act of Feb. 24, 1909, for injuries lasting 15 days or less; amounts paid under Executive order of Feb. 26, 1913; amounts paid under Executive order No. 1902, dated Mar. 20, 1914; and amounts paid under act of Sept. 7, 1916, covering period from Aug. 1, 1908, to June 30, 1920.

	Injuries.	Deaths.	Under act of Feb. 24, 1909.	Total.
Total payments, by fiscal years:	\$32,355.71	\$3,682.79	\$8,225.16	\$44,263.66
Aug. 1, 1908, to June 30, 1909		21,053.22	16,010.30	133, 873. 85
July 1, 1910, to June 30, 1911		35, 248. 39	49, 957. 80	253, 622, 42
July 1, 1911, to June 30, 1912	166,620.21	37,534.68	55,838.25	259, 993. 14
July 1, 1912, to June 30, 1913	150,943.79	23,792.02	49, 335.91	224,071.72
July 1, 1913, to June 30, 1914	111, 240. 75	41,015.34 14,268.97	33, 704. 92	185, 961. 01 31, 972. 37
July 1, 1914, to June 30, 1915	17,703.40 168.00	1,206.00		1,374.00
July 1, 1916, to June 30, 1917				545.40
July 1, 1917, to June 30, 1918				
July 1, 1918, to June 30, 1919	163.54			163.54
Total	744, 421. 96	178, 346. 81	213, 072. 34	1, 135, 841. 11
Payments under Executive order of Feb. 26, 1913				13, 227. 62
Payments under Executive order of Feb. 26, 1915 Payments under Executive order of Mar. 20, 1914:				15, 221.02
Apr. 1, 1914, to June 30, 1914	4, 283. 82			4,283.82
July 1, 1914, to June 30, 1915	41,871.91	43,017.71		84, 889.62
July 1, 1915, to June 30, 1916.	32,341.85	33,321.07		65, 662. 92
July 1, 1916, to June 30, 1917	9,748.10	11,400.95		21, 149, 05 740, 18
July 1, 1917, to June 30, 1918				1,547.34
July 1, 1919, to June 30, 1920	1,073.95			1,073.95
Payments under provisions of contracts between	T T			, i
Panama Canal and contractors				334. 18
Payments under special acts of Congress			• • • • • • • • • • • • • • • • • • • •	39,418.37
Total				1,368,168.16
1				
Amounts paid to Panama Railroad employees:	770 61	1		770.01
Apr. 1, 1914, to June 30, 1914 July 1, 1914, to June 30, 1915.	770.61 10,275.45	2 300 42		770.61 12,575.87
July 1, 1915, to June 30, 1916.	9,056.66	3, 330, 24		12,386.90
July 1, 1916, to June 30, 1917	3,146.70	3,330.24		3, 146. 70
July 1, 1917, to June 30, 1918	185, 98			185.98
Payments made by the Panama Railroad Company for				614 60
injuries incurred prior to Apr. 1, 1914				614.60
Sept. 7, 1916, to June 30, 1917	15,845.04	13,961.57		29,806.61
July 1, 1917, to June 30, 1918	42,396.54	3,848.77		46, 245.31
July 1, 1918, to June 30, 1919	93,412.48	10,798.06		104, 210. 54
July 1, 1919, to June 30, 1920	42,828.85	4,496.50		47,325.35
Grand total				1,625,436.63
				, ,

Table No. 52.—Number of injuries, by extent of disability, for each division or department.

	1									
		Num	ber of in	njuries r	esulting	g in tem	porary	disabili	ty of	
	Total injuries.	Death.	Permanent disability.	1 to 3 days.	4 to 7 days.	8 to 14 days.	15 to 28 days.	Over 28 days.	Total temporary disability.	Pending cases.
Executive office  Motor cars, Panama Canal Clubs and playgrounds Lock operation division Electrical division Dre leing division Municipal engineering Office engineer and surveys Meterology and hydrography Marine division Quartermaster division Storehouses Printing plant Fuel oil plant Subsistence Accounting department Building division Fortification division Fortification division Fortification division Health department Civil government Maintenance of way Panama Railroad stables and baggage transfer. Coaling plants Hotels Commissary division Plantations Cattle steamers Cattle tranches Hog farm Dairy farm Railroad transportation Receiving and forwarding agencies Dams and backfills	2 2 2 101 69 231 433 3 2 2 50 806 806 4 4 5 3 474 4115 115 1279 287 7 261 1 18 24 744 108	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	1 2 2	1 2 69 44 151 1245 1245 1245 1245 1245 1245 12	2 9 8 8 24 44 49 2 6 117 15 11 1 2 6 6 80 6 20 3 20 20 26 2 37 113 4	1 5 7 7 25 5 68 1 1 8 8 44 11 1 1 7 1 1 48 43 1 1 2 2 3 0 1 4 4 1 1 2 8 1 1 2 8 1 1 2 8 1 1	111 5 16 46 46 46 46 46 46 46 46 46 46 46 46 46	22 22 3 3 7 5 5 5 1 1 1 1 1 1 2 3 3 7 5 5 5 1 1 1 1 5	2 2 2 99 68 227 423 3 2 50 791 16 4 34 4 55 134 111 271 6 283 4 7 248 23 730 108	11 2 5 5 3 3 4 4 4 4 4 10 10 12 12
Total	4,468	17	15	2,568	618	572	392	225	4,375	61

Table No. 53.—Nature of nonfatal cases, by department or division.

	contusions, asions.	sealds.	*s	etures, ions.	ns.	S.		Spra ar stra	id	** **		
	Bruises, contus abrasions.	Burns and sealds.	Concussions.	Cuts, punctures, lacerations.	Amputations.	Dislocations.	Fractures.	Hernia.	Other.	Eye injuries.	All other.	Total.
Executive office	i			1 1					1			2 2 2 2
Clubs and playgrounds  Lock-operation division  Electrical division	38 26	5 5		28 28 23	1 1	1 1 1	3	2 1	9	12	1	100 69 230
Dredging division  Municipal engineering  Office engineer and surveys.  Meteorology and hy-	75 139 2	9		106 213 1	5 4	1	6 7	7	11 29	^ 8 17	4	430
drography	25 320 30	5 61	2	13 238 26	10 2	3	1 2 32 7	1 7	3 50 4	1 80 4	3	50 806 74
Storehouses Printing plant Fuel-oil plant	36 4 2	3 1		40 10 1	1		4		10 1 1	3	2	99 16 4
Su bsistence	13 1 180 26	9 5 3	3	9 202 17	1 2	2	14	4	3 1 32 4	$\begin{array}{c} 1\\25\\1\end{array}$	2 1	35 3 471 55
Health department  Civil government  Maintenance of way	28 4 43	7 1 3		78 3 52	2 1		3 3 5	2 1 1	1 6	1 3	8	134 14 114
Panama Railroad stables and baggage transfer Coaling plants Hotels.	134 2	15 1	1	81 2	2		8	4 1	 8 1	24		277 7
Commissary division	107 1 4	13 i		119 3 1	2		61	1	26	11	2	287 4 7 258
Cattle ranches. Hog farm Dairy farm. Railroad transportation	48 12 7	1 1 5		181 1 5 8	1	1	8 2		6	7	6	1 18 24
Receiving and forwarding agencies.  Dams and backfills	380 35	13 1	3	235 56	1	1	41	4	58 4	6 6	Ž 6	744 108
Total	1,725	182	9	1,756	36	11	156	40	280	218	38	4, 451

Table No. 54.—Nature of injury in nonfatal cases, with the amount of expenditures in each class.

Nature of injury.	Total injuries.	Expendi- ture.
Bruises, contusions, and abrasions.	1,725 182	\$4,369.26
Burns and scalds Cuts, punetures, and lacerations Other	1,757	1,005.50 22.75 6,516.15
Total	3,672	
Sprains and strains: Hernia	40	659.18
Back. Ankle, foot, or leg. Wrist or arm	115 73	317.00 193.29
Wrist or arm. Other	51 41	155.67 45.17
Total	320	
Dislocation	11	91.81
Fractures: Arm	26	1,933.06
Hand Finger and fingers	9	107.06 1,466.33
Leg	34 30	3,109.13 1,393.95
Toe or toes	19 7	275.48 38.69
Ribs. Skull. Other.	2 16	202.88 565.83
Total	156	
Eye injuries:		
Loss of both eyes. Loss of one eye. Partial loss of vision.		
Other	218	388.53
Total	218	
Amputations: Right arm	1	119.44
Right hand Right finger	1 10	179.83
Right fingers, 2 or more Left arm	4	1,038.04
Left hand. Left finger.	9	160.32
Left fingers, 2 or more. Leg.	$\frac{4}{2}$	11.35 433.51
Foot. Toe or toes.	5	231.72
Total	36	
Other temporary and permanent injuries: Poisoning and occupational diseases.	37	48.31
Loss of hearing, one ear.	1	44.44
Total	38	
Grand total	4,451	25, 123.68

## REPORT OF AUDITOR.

## Table No. 55.—Cause of injuries.

,	Executive office.	Motor cars, Panama Canal.	Clubs and playgrounds.	Lock operation division.	Dams and backfills,	Electrical division.	Municipal engineering.	Dredging division.	Office engineer, surveys.	Meteorology and hydrography.	Marine division.	Mechanical division.
Animals, kicks, bites, falls from Blow of hammer or other object. Caught between two hard bodies Collapse of material Contact with machinery Contact with gear Contact with rough edge or surface Contact with sharp instruments or splinters, etc. Derailment of locomotive or cars Explosion of boilers, pipes, gases Explosion of powder or dynamite. Electric current Fall from elevations Fall into excavations Fall into excavations Fall on even surface. Hot metals, liquids, inflammable or corrosive substance. Lifting, pushing, pulling Operating hand car or speeder. Struck by flying object. Struck by flying object. Struck by swinging or loose object. Stepping on nails, thorns, etc. Using simple hand tools. Vapors, gases, or poisonous substance. Resisting or making arrest, fighting. Drowning.		i	1	3 1 15 1 9 5 2 10 2 5 3 7 11 11 3 3 3 2	4 1 4 1 1 2 3 8 40 1 7 10 1 4 3 3 7	2 5 1 5 3 4 8 1 1 1 2 4 4 1 5 7 6	2 15 57 10 3 42 36 7 1 11 8 5 14 8 30 1 1 2 5 9 6 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2	10 43 5 10 19 17 2 19 1 19 8 12 19 17 8 12 19 17 8 12 19	1	2	7 1 4 2 3 6 3 2 1	35 125 19 25 15 30 1 4 4 25 57 40 31 128 25 10 10 31 128 10 10 10 10 10 10 10 10 10 10 10 10 10
Total	2	2	2	101	108	69	433	231	3	2	50	806

Table No. 55.—Cause of injuries—Continued.

	Quartermaster,	Storehouses.	Printing plant.	Fuel oil plant.	Subsistence.	Accounting.	Building division.	Fortification division.	Health department.	Civil government.	Maintenance of way.	Stables and baggage transportation.
Animals, kicks, bites, falls from Blow of hammer or other object. Caught between two hard bodies. Collapse of material. Contact with gear. Contact with machinery Contact with ough edge or surface. Contact with sharp instruments or splinters, etc. Derailment of locomotive or cars. Explosion of boilers, pipes, gases Explosion of powder or dynamite. Electric current. Fall from elevations. Fall from cars. Fall into excavations. Fall into excavations. Fall on even surface. Hot metals, liquids, inflammable or corrosive substance. Lifting, pushing, pulling. Operating hand car or speeder. Struck by engine, cars, collision. Struck by falling body. Struck by swinging or loose object. Stepping on nails, thorns, etc. Using simple hand tools. Vapors, gases or poisonous substance. Resisting or making arrest, fighting.	3 7 1 8 2 7 7 3 6 5 11 7 2 1 1	24 	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1	1 3 8 1 1 1 1 1 1 1 2	1 1	3 14 39 26 6 28 31 2 1 1 19 4 20 33 4 6 11 72 17 1	1 2 2 7 3 8 8 4 4 4 6 6 4 6 4 6 2 2 3 3	9 2 11 1 5 466 3 4 9 8 2 2 11 11 15 5 2	1 1 2 2 1 1 1 3 1 1 2 2 1 2 1 1 1 2 2 1 1 1 1	1 33 2 2 6 10 2 1 6 3 3 1 1 6 6 3 12 4 1 1 2 2 8 8 4 1 1	i
Drowning.  Total.	77	99	16	4	35	3	474	55	134	14	115	1

Table No. 55—Cause of injuries—Continued.

	Coaling plants.	Hotels.	Commissary	Plantations.	Cattle steamers.	Cattle ranches.	Hog farm,	Dairy farm.	Railroad transportation.	Receiving and forwarding agency.	Total,
Animals, kicks, bites, falls from Blow of hammer or other object. Caught between two hard bodies. Collapse of material. Contact with machinery. Contact with gear. Contact with rough edge or surface. Contact with sharp instruments or splinters, etc. Derailment of locomotive or cars. Explosion of boilers, pipes, gases. Explosion of powder or dynamite. Electric current. Fall from elevations. Fall from ears. Fall into excavations. Fall into excavations. Fall or wen surface. Hot metals, liquids, inflammable or corrosive substance. Lifting, pushing, pulling. Operating hand car or speeder Struck by flying object. Struck by swinging or loose object. Struck by swinging or loose object. Stepping on nails, thorns, etc. Using simple hand tools. Vapors, gases or poisonous substance. Resisting or making arrest, fighting. Drowning.	2 2 2 3 3 1 2 6 9 2 2 2 10 17 10 2 6 2 7 5 1 1 2 6 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	6 1 31 1 8 1 1 23 52 1 1	1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	11 1 2 16 141 2 15 15 13 1 1 3 1 1 3 3 1 1	1	1 1 1 1 1 1 1 1	2 3 2 3 2 2 2 2 2 2 1 1	182 15 64 28 3 20 19 26 10 34 71 185 56 12 1 1 22 1 25 5 5 7	522 95 634 75 90 3 329 488 16 14 14 279 57 28 200 155 212 22 271 162 271 162 271 162 271 271 28 33 33 34 35 35 36 36 37 37 37 37 37 37 37 37 37 37 37 37 37
Total	279	7	287	4	7	261	1	18	24	744	4,468

Table No. 56.—Receipts, issues, and transfers of stores and purchases charged to divisions during fiscal year 1919-20.

	I	Receipts by-	-		Issued by-		Purchases
Month.	Purchases.	Transfers.	Manufac- ture.	Issues.	Transfers.	Sales.	direct to divisions.
July August September Octobor November December January February March April May June	\$456, 196. 47 333, 816. 41 674, 447. 31 575, 280. 08 419, 535. 93 622, 000. 10 765, 369. 01 503, 189. 74 505, 229. 51 391, 119. 50 625, 448. 76 803, 496. 72	539, 115. 52 342, 002. 64 478, 202. 95 814, 293. 06 485, 600. 06 392, 574. 46 917, 488. 87 743, 641. 67	42, 014. 33 36, 146. 34 36, 326. 03 41, 983. 09 64, 647. 62 33, 798. 64 37, 696. 72 41, 637. 11 32, 860. 78 35, 924. 74	659, 204. 13 637, 492. 43 707, 332. 67 569, 777. 41 961, 036. 82 989, 219. 74 622, 269. 74 795, 200. 95 765, 843. 95 715, 532. 81	283, 563. 05 361, 026. 53 431, 153. 64 222, 621. 65 286, 002. 60 280, 426. 72	91, 649. 87 75, 314. 31 83, 737. 25 53, 293. 30 109, 533. 6 204, 709. 13 144, 200. 92 229, 598. 84 245, 662. 12 365, 334. 55	171,592.34 214,383.93 205.610.33
	6, 675, 129. 54			1		1,921,189.70	2,978,864.9
Regular stock in st Obsolete material July 1, 1919	orehouses, Ju in obsolete s	lly 1, 1919 storehouses	6, 312, 836. 28 150, 212. 70	1, 1920		5, 354, 786. 34	
Material in hands o	f divisions J	uly 1, 1919	879, 022. 45	houses Ju Material in	nly 1, 1920 hands of div	risions July	27, 365. 1 546, 618. 2

Table No. 57.—Comparative statement of store balance, July 1, 1919, and July 1, 1920.

Quartermaster store (by commodities).	July 1, 1919.	July 1, 1920.
1. Air-brake material.	\$32,143.82	\$29,356.4
2. Alcohol	22, 429. 07 237. 18	9, 977, 7
Alum and other chemicals for filtering water.     Arms and ammunition	237.18	856.1 35.2
4. Arms and ammunition. 5. Asbestos and magnesia and compounds 6. Asphalt, petroleum residue and mineral tar, pitch, and rosin 7. Bloeks, chain and tackle 8. Boilers, steam 9. Bolts, nuts, rivets, and washers 0. Books, educational, library, and reference 1. Bricks, building, fire and paving 2. Brooms, mops, dusters, and scrub brushes. 3. Building material (not otherwise specified). 4. Buoys.	1,223.14	81.6
6. Asphalt, petroleum residue and mineral tar, pitch, and rosin	12,187.58 9,187.86 1,332.93 102,759.21	2,501.54
7. Blocks, chain and tackle	9,187.86	11, 614. 2° 904. 30
9. Bolts nuts rivets and washers	102 759 21	80, 473, 89
0. Books, educational, library, and reference.	11.00	98.98
1. Bricks, building, fire and paving.	9,830.90 8,888.62 23,022.01	6,546.2 7,837.2
2. Brooms, mops, dusters, and scrub brushes	8,888.62	7,837.29
3. Building material (not otherwise specined) 4. Buoys. 5. Cars, hand, push, and inspectors', and velocipedes 6. Castings, rough—brass and copper 7. Castings, rough—iron and steel 8. Cement, Portland (including bags) 9. Chain 0. Cleanings and toilet supplies	950.27	58,445.55 949.28
5. Cars, hand, push, and inspectors', and velocipedes	1,203.08 38,345.42	1,885.98 34,962.88
6. Castings, rough—brass and copper.	38, 345, 42	34,962.83
7. Castings, rough—iron and steel. 8. Coment. Portland (including lags)	91,067.35	88,098.20
9. Chain	91,067.35 20,633.22 21,519.82 12,007.35	88,098,20 102,982,10 10,266,49 4,225,40
0. Cleanings and toilet supplies	12,007.35	4, 225. 40
1. Construction equipment, accessories, and supplies.	82,746.72	80,386.87
Cleanings and toilet supplies     Construction equipment, accessories, and supplies     Containers, nonexpendable (except cement bags).     Conveying and lifting equipment, accessories, and parts.	82,746.72 56,958.18 112,293.62	96, 997, 59
	68. 42	80,386.85 96,997.59 103,741.02 1,190.33
5. Drafting supplies.	631.76	167. 26
6. Drugs, chemicals, vaseline, naphtha, and benzine	58,692.77 78.42	18,750.57
5. Drafting supplies. 6. Drugs, chemicals, vaseline, naphtha, and benzine. 7. Educational supplies. 8. Ejectors, injectors, lubricators, pop valves, blow-off cocks, water gauges	78, 42	• • • • • • • • • • • • • • • • • • • •
and parts	43 381 40	33 047 61
9. Electrical equipment, accessories and parts (ex lock machinery)	43,381.40 368,510.76 1,591.60	33,047.61 478,937.18 1,241.67
9. Electrical equipment, accessories and parts (ex lock machinery). 1. Electricians' supplies (not otherwise specified).	1,591.60	1,241.67
<ol> <li>Engines, steam, and parts</li> <li>Explosives and blasting batteries and parts</li> <li>Farm, plantation, and cattle ranch implements, supplies and parts.</li> <li>Fire preventing and fire fighting equipment, supplies and parts (not hose).</li> </ol>	6,343.02 61,379.79 8,330.19 3,781.17	6,328.87 30,086.94
4. Farm, plantation, and eattle ranch implements, supplies and parts	8 330 10	30, 086, 94
5. Fire preventing and fire fighting equipment, supplies and parts (not hose).	3,781.17	303.76 16,132.64
6. Fittings, pipe and valve	118,247.27	1.12 1.11 56
7. Flags (railroad excluded)	4, 196.33 801, 967.42	3, 513. 50
9. Floating equipment, parts for	801, 967, 42 16, 480, 13	538, 636. 15
5. Fire preventing and fire fighting equipment, supplies and parts (not hose) 6. Pittings, pipe and valve 7. Flags (railroad excluded) 9. Floating equipment, parts for 0. Forage, feed, and bedding 1. Fuel, coal, anthracite 2. Fuel, coal, bituminous 3. Fuel, crude oil 4. Furnace and foundry supplies (except pig iron) 5. Furniture and equipment (office) and parts 6. Furniture, other than o.fice 7. Gasoline 8. Gauges, steam and vacuum 9. Glass, window, sash and plate 0. Glue, gelatine, rubber, and asbestos cement 1. Hair, feethers and moss. 2. Hardware (except nails and spikes) 3. Harness, saddlers', and other corral equipment and supplies.	6,076.32	3, 513, 50 538, 636, 15 6, 581, 62 2, 971, 40
2. Fuel, coal, bituminous	2,775.07 205.88	
3. Fuel, crude oil	205. 88	559. 47 52, 302. 24
5. Furniture and equipment (office) and parts	66,325.10	52,302,24 5,094.81
6. Furniture, other than o lice	4,396.55 13,555.20 95,023.12	11,873.32
7. Gasoline	95, 023, 12	11,873.32 102,706.14
8. Gauges, steam and vacuum	517.81	1 000 11
0. Glue, gelatine, rubber, and ashestos cement	33, 752, 42 3, 732, 56 1, 926, 78	37, 929, 72 2, 952, 21 16, 785, 52 170, 011, 08
1. Hair, feethers and moss.	1 1,926.78	16, 785, 52
2. Hardware (except nails and spikes)	176, 312. 10	170, 011. 08
3. Harness, saddlers', and other corral equipment and supplies	6,505.32	8,662.17 25,636.25 3,080.80
6. Instruments, equipment, and supplies, surgical, medical and laboratory.	2.371.74	3 080 80
7. Iron, in pigs	30, 569, 66	24,736.71
8. Iron and steel, in bars and sheets (ex G. I. roofing)	6,505.32 58,436.67 2,371.74 30,569.66 570,239.11 35,500.20	24, 736. 71 250, 191. 60 22, 650. 82
9. Iron and steel, reinforcing	35,500.20   106.04	22,650.82 357.91
1. Laundry apparatus, accessories and parts	826, 99	455 07
2. Lawn mowers and rakes (other than hand operated)	105.33	780, 97 780, 95 21, 327, 79 5, 023, 56 220, 292, 68 43, 957, 46
3. Leather and belting.	13,574.96	21,327.79
4. Lime, plaster, and clay	8, 593. 21 186, 124. 12 52, 616. 99	5,023,56
7. Lumber, fancy	52, 616, 99	43, 957, 46
8. Magazines and newspapers	136. 22	
9. Metals, in pigs (excepting iron)	23,381.92	11,528.63
Meters, entrept, and parts     Meters, entrept, and parts	23,381,92 79,784,54 3,234,25	11,528.63 63,419.67 6,180.83
2. Meters, water, oil, and air.	1,037,77	1.094.90
3. Nails and spikes.	1,037.77 39,941.53	1,094.90 53,004.52
9. Iron and steel, reinforcing 0. Ladders and scaffolds 1. Laundry apparatus, accessories and parts 2. Lawn mowers and rakes (other than hand operated) 3. Leather and belting 4. Lime, plaster, and clav 6. Lumber, pine, fir, and redwood 7. Lumber, fancy 8. Magazines and newspapers 9. Metals, in pirs (excepting iron) 0. Metals, in sheets and bars (excepting iron), and steel 1. Meters, current, and parts 2. Meters, water, oil, and air 3. Nails and spikes 4. Office supplies and stationery 5. Oilcloth and linoleum	3,630,96	4,300.00
6 Oile illuminating	4,053.01 28,574.59	10,509.04
7. Oil, lubricating, and greases, graphite, welding and cutting compounds	86, 605, 33	56, 724, 94
8. Packing, calking, and gaskets.	86, 605, 33 57, 860, 70	1 3, 888, 25 56, 724, 94 56, 752, 54 4, 227, 79
a. Packing receptacles (expendable) and other packing supplies	6,023.85	4,227.79
<ol> <li>Oil, lubricating, and greases, graphite, welding and cutting compounds.</li> <li>Packing, calking, and gaskets.</li> <li>Packing receptacles (expendable) and other packing supplies.</li> <li>Paints and painters' supplies, putty, varnishes, shellacs, linseed oils, drier, filler, white and red lead, etc.</li> </ol>	272, 119, 46	318, 459. 33
1 Day or machine	1,040.26	02 100 00
1. Paper, packing	1.040.20 1	23, 106, 89

<sup>&</sup>lt;sup>1</sup> Indicates credit balances caused by credit to storehouses for issues of these articles, the charges for which were not received until after closing of books for the current fiscal year.

Table No. 57.—Comparative statement of store balance, July 1, 1919, and July 1, 1920—Continued.

Quartermaster store (by commodifies).	July 1, 1919.	July 1, 1920.
	00 522 42	20 764 21
84. Piling	1 2 140 13	\$9,764.31
86. Pipe and tubing (metal)	\$6,533.43 12,149.13 142,819.08	118, 748, 27
84. Piling  85. Pipe and fittings (vitrified).  86. Pipe and tubing (metal).  87. Plumbing material (not otherwise specified).  88. Police equipment (except arms and ammunition).  89. Polishing and abrading supplies.  90. Printing-plant equipment and supplies (not including paper).  91. Production e uipment, accessories, and parts.  92. Pumps, and parts, including electric.  93. Rails.  94. Recreation equipment and parts.	39, 171, 50	4, 339, 55 118, 748, 27 45, 475, 35
88. Police equipment (except arms and ammunition)	36.70	
89. Polishing and abrading supplies	5, 234, 60 377, 13	8,515.22
9). Printing-plant equipment and supplies (not including paper)	53, 162. 00	59,253.13
92. Pumps, and parts, including electric.	16, 570, 18	15, 656, 25
93. Rails	13, 491. 57	9,665.99
95. Refrigeration equipment and parts. 95. Refrigerating equipment, accessories, and parts. 96. Refrigeration supplies.	757.56	639. 52
95. Refrigerating equipment, accessories, and parts	2,638.32 4,192.03	8,537.19 26,535.37
	4, 152.00	20,000.01
ROLLING STOCK, PARTS FOR.	71 105 70	64 905 50
106. Locomotives 107. Freight and passenger train cars. 108. Motor cars, railroad.	71,195.79	64, 825, 56 122, 789, 44 9, 516, 30
108. Motor cars, railroad	253, 427, 90 9, 524, 13	9,516,30
109. Rope	78, 246. 54 352. 85	72,604.39 1,715.47 26,648.05
110. Rubber products (except packing and belting and tires)	352.85	1,715.47
111. Sashes, doors, blinds, molding, and capping, screening, strips, etc	7,820.50 928.36	26, 648. 05 1, 207. 84
112. Scientific equipment and parts (except surgical and surveying)	1,489,70	1,615.55
114. Screening, bronze and copper.	8, 145, 81	45, 287, 33
108. Motor cars, railroad 109. Rope. 110. Rope. 111. Sashes, doors, blinds, molding, and belting and tires). 111. Sashes, doors, blinds, molding, and capping, screening, strips, etc. 112. Scales and parts 113. Scientific equipment and parts (except surgical and surveying). 114. Screening, bronze and copper. 115. Searchlights and lighthouse equipment and supplies. 116. Signal material (automatic). 117. Stone, sand, gravel, and slate. 118. Subsistence equipment. 119. Subsistence supplies. 120. Surveying instruments and supplies. 121. Tanks. 122. Telegraph and telephone equipment, accessories, and parts. 123. Tents and parts, flies, and tarpaulins. 124. Thermometers and barometers.	529, 29	611.15
116. Signal material (automatic)	15, 873, 43 1 329, 94	12,850.53
117. Stone, sand, gravel, and slate	14,920.16	14,915.13 19,828.75
119. Subsistence supplies	1,497.65	1,608.35
120. Surveying instruments and supplies.	33.37	33.37
121. Tanks	426.65	386.15
122. Telegraph and telephone equipment, accessories, and parts	27,395.70	28, 892, 00
123. Tents and parts, mes, and tarpanins	27,395.70 2,970.39 1,022.07	3,848.86 2,667.61
125. Ties, cross and switch	1 331.93	1 63 50
126. Tiles, building	10, 186, 41	6,757.36
127. Tools, miscellaneous.	76, 572, 27	6,757.36 72,960.29 30,139.11
128. Tools, pilenmatic and electric.	28, 413, 27 21, 661, 53	30,139,11 22,241,37
130. Trucks, warehouse, etc	1,424.86	2,473.14
131. Tubes, boiler and condenser	83,821.64	88,943.54
132. Vehicles (animal-drawn), accessories, and parts.	6, 290. 94	7,255.64
133. Vehicles (motor-drawn), accessories, and parts (railroad motor cars and	00 505 00	00 070 15
134 Waste	86, 565, 88 33, 824, 84	92,979.15 10,124.63
135. Water cranes and standpipes.	33, 824, 84 118, 13	710 10
136. Wearing apparel and sewing supplies	1,385,81	2,873.52
137. Wire and wire cables	142,106.41	106,757.42
130 Wayen products and fabrics	68 024 60	58 891 86
140. Steel, structural	1,333,31 142,106,41 167,998,67 68,024,60 3,267,62 1,718,73	118, 13 2, 873, 52 106, 757, 42 153, 419, 68 58, 891, 86 123, 428, 23 1, 718, 73 273, 30
141. Lock machinery and parts	1,718.73	1,718.73
142. Dry-dock parts (not otherwise specified)		273, 30
145. Unsolete material.	36, 049. 69	69, 470, 71 4, 458, 51
147. Lumber, native	19,218.32	20, 255, 48
148. Concrete blocks for breakwater repairs.	40,498.34	40,498,34
149. Fuel, Diesel oil	2,203.95	5,875.86
151. Obsolete material	3,366.20	2,498.39
153. Marine hardware		2,450.00 39,650.19
122. Telegraph and telephone equipment, accessories, and parts. 123. Tents and parts, flies, and tarpaulins. 124. Thermometers and barometers 125. Ties, cross and switch 126. Tiles, building. 127. Tools, miscellaneous. 128. Tools, pnenmatic and electric. 129. Track material (other than rails and ties). 130. Trucks, warehouse, etc. 131. Tubes, boiler and condenser. 132. Vehicles (animal-drawn), accessories, and parts. 133. Vehicles (animal-drawn), accessories, and parts, (railroad motor cars and fire equipment excluded). 134. Waste. 135. Water cranes and standpipes. 136. Wearing apparel and sewing supplies. 137. Wire and wire cables. 138. Wire, covered and coated. 139. Woven products and fabries. 140. Steel, structural. 141. Lock machinery and parts. 142. Dry-dock parts (not otherwise specified). 143. Obsolete material. 144. Lumber, native. 145. Magnetos, carburetors, and parts. 147. Lumber, native. 148. Concrete blocks for breakwater repairs. 149. Fuel, Diesel oil. 151. Obsolete material. 152. Obsolete material. 153. Marine hardware.  Total, quartermaster's stores.	5 741 090 38	·
Toţal, quarţermasţer's sţores. Miscellaneous disţricţ quarţermasţer's sţores.	13, 713, 54	5,354,786.34 10,681.05 25,959.10 131,021.15
Fuel-oil store	285,744.32	25,959.10
Medical store	5,741,090.38 13,713.54 285,744.32 153,234.82 21,301.09	131,021.15
Stationery store Panama Canal Press	21,301,09 97,700,58	22, 472, 85 109, 605, 55
	<u>-</u>	ļ
Toţal	6,312,784.73	5, 654, 526. 0!
	!	·

Undicates credit balances caused by credit to storehouses for issues of these articles, the charges for which were not received until after closing of books for the current fiscal year.

Table No. 58.—Supply department, commissary branch, cost of material and supplies purchased and sold during the year ended June 30, 1920.

Class.	On hand June 30, 1919.	Purchases.	On hand June 30, 1920.	Sold.
Groceries Hardware. Dry goods Boots and shoes. Cold storage. Tobacco Raw material Total.	161, 110. 59 901, 634. 71 255, 296. 87 186, 251. 83	\$2,838,233.80 339,836.51 1,575,331.94 436,227.53 1,854,227.62 337,959.87 12,809,165.87	139,747.80 982,720.41 318,960.85 152,461.37 38,752.85	\$2,812,902.02 361,199.30 1,494,246.24 372,563.55 1,888,018.08 365,568.53 3,026,515.29

### 1 Cattle, hogs, and poultry in amount of \$2,044,035.16.

Percentage

#### PERCENTAGE OF SURCHARGE EARNED ON COST.

Class.	Sold.	Earned surcharge.	earned on cost.
Groceries	\$2,812,902.02	\$381,983.57	13.58
Hardware	361, 199.30	102, 251.08	28.31
Dry goods	1,494,246.24	494,663.94	33.10
Boots and shoes.	372, 563. 55	101,563.25 479,817.49	27. 26 25. 41
Cold storage	1,888,018.08 365,568.53	204, 391, 47	55, 91
Tobacco		34,823.76	1.15
Total.	10,321,013.01	1,799,494.56	17.43
LOCATION OF PURCE			
United States		8	6,605,167.59
Foreign Costa Rica			312,077.03 92,295.43
Haiti.			1, 232. 14
Central and South America and West Indies			96, 596, 54
Cattle industry			2, 182, 118. 63
Local purchases			787,663.32
Panama Canal			113,832.46
Total		1	0, 190, 983. 14
CLASSIFICATION BY COM		,	00000000000
Groceries			\$2,838,233.80 339,836.51
Hardware			1,575,331.94
Boots and shoes.			436, 227. 53
Cold storage			1,854,227.62
Tobacco			337, 959. 87
Raw material			2, 809, 165. 87

# Table No. 59.—Supply department, commissary branch, statement showing distribution of sales and selling value for the year ended June 30, 1920.

	1919	1920	Increase.
To United States Government.  Panama Canal. Steamships. Panama Railroad Individuals and companies Coupon Sales.	\$2,395,162.73 1,458,762.36 838,931.79 480,223.34 205,751.93 5,858,814.18	\$2,161,118.46 1,558,588.17 1,119,852.93 411,480.95 272,866.75 6,883,513.80	\$234, 044. 27 99, \$25. 81 280, 921. 14 68, 742. 39 67, 114. \$2 1, 024, 699. 62
Gross revenue from sales	11,237,646.33	12, 407, 421.06	1,167,774.73
Supplied for equipment: Commissaries for expense. General expense. Plants for expense.	173, 561. 79 1, 205. 55 88, 514. 78	181, 849. 04 1, 023. 09 131, 108. 20	8,287.25 182.46 42,593.42
Total	263, 282. 12	313,980.33	50, 698. 21
Loss by condemnation, shrinkage, etc	118,817.40 66,973.39	166, 282, 50 63, 544, 59	47, 465. 10 3, 428. 80
Total	185,790.79	229,827.09	44,036.30
Grand total	11,686,719.24	12,951,228.48	1, 264, 509. 24

## APPENDIX F.

# REPORT OF THE EXECUTIVE SECRETARY, EXECUTIVE DEPARTMENT.

Balboa Heights, Canal Zone, August 8, 1920.

Sir: The report of this department for the fiscal year contains, in addition to an outline of the work of the various divisions and bureaus, statements of the working force; studies of increase in living costs; a summary of wage adjustments; reports of the courts, which are included in the executive department for administrative purposes only; and references to other matters in which this department acts in behalf of the whole organization.

## POPULATION OF THE CANAL ZONE.

An enumeration of the population of the Canal Zone was made in January, 1920, in accordance with instructions from the Bureau of the Census. The results were published in The Panama Canal Record of April 28, 1920. It has been the practice to have an enumeration made each June by the division of police. This is less elaborate as to classification than the decennial census; but it is accurate, and inasmuch as it is made each year (thus giving an annual check on the constantly changing population) it is used as the basis for the vital statistics of the Canal Zone. The summary of the police census was published in The Panama Canal Record of July 28, 1920. It shows the following:

	Ame	ricans.	All o	thers.	Λ	mericai	ıs.	A	s.			
	Men.	Em- ploy- ces.	Men.	Em- ploy- ees.	Wom- en.	Em- ploy- ees.	Chil- dren.	Wom- en.	Em- ploy- ees.	Chil- dren.	Total.	
Balboa district Cristobal district Prisoners	{2,410 {1,138 {	2,305 1,128	3, 115 3, 196 127	2,577 3,056 19	1,853 553	315 54	1,924	1,770 966	60	2, 432 1, 530	5, 237 13, 504 4, 252 7, 995 20 151	
Total employees Total persons		1 3, 434	6, 438	5,652	2,406	369	2,536	2,736	74	3,962	1 9,529 21,650	

<sup>&</sup>lt;sup>1</sup> Includes 63 American civilian employees of the United States Army and Navy.

## WORKING FORCE.

The working force varied between 20,375 and 22,529 during the year. Table No. 1 shows the number actually at work at the close of the year, the date of enumeration being June 23, 1920. Table No. 2 shows the variation from month to month. Table No. 3 gives a comparison with previous years.

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While the force changed but little in numbers, the turnover of personnel was, as usual, great. No figures are available for the labor force of West Indians (known as silver roll force); but it is known that emigration to Cuba and the United States increased greatly. Immigration was also active, and there was available at all times on the Isthmus a larger labor force than the Canal and railroad could absorb. Wages paid by the Canal are somewhat higher, and living costs are generally lower on the Isthmus than in the industrial centers of the West Indies and the Caribbean coast.

The turnover in force of Americans, represented by new employments and separations from the service, was approximately 30 per cent, due to American employees having resigned to return to the United States. In general, however, the cost of living on the Canal Zone is less than in the United States, due to such perquisites as free quarters, medical care, and vacation with pay, which form part of the contract necessary to attract American men to this service.

Table No. 1.—Force actually at work on June 23, 1920.

		٤	Silver e	mploy	ees' wa	ages sp	ecified	in Un	ițed Sț	ațes cu	irrency	y.
	Monthly.		Λ	rțisan	s.				Labe	orers.		
		Spe- cial.	31 cențs.	29 cenţs.	26 cențs.	24 cențs.	27 cențs.	25 cențs.	24 cențs.	23 cențs.	22 cențs.	21 cențs
Operation and mainte- nance: Office Building division Electrical division.	42 99 73	1 1	15 2	283 15	315 17	333 105		• • • • • • • • • • • • • • • • • • • •			323 52	179
Municipal engi- neering division Lock operation Dredging division Mechanical division Marine division	300 503 843 135 431	13 58	31	69 4 20 55	80 6 28 219	95 11 33 457		1			140 18 117 569	421 50 77 234
Forțificațions Total	2,476	76	26 118	31 477	694	1,058		2			$\frac{37}{1,256}$	1,058
Supply department: Quartermaster. Subsistence. Commissary.	848 388 1,104	 1	52	103 2 18	71	115 1 15		7	2 12	5	80	615
Caţţle indusţry— planţaţions Hoţel Washingţon.	263 100	483		5 1	6 2	7						39
Accounting department Health department. Executive department.	10 464 238	29	3	6 3	5 2	$\frac{7}{2}$					19	300
Panama Railroad: Superintendent Transportation	133 182		4	24	8	28	6	1			5	355
Receiving and for- warding agent Coaling stations	126 387	99 15	49 52	21	73 20	23	641	486	1,114			4
Toțal	4,243	627	162	183	203	198	647	494	1,128	5	109	1,38
Grand total	6,719	703	280	660	897	1,256	647	496	1,128	5	1,365	2,44

Table No. 1—Force actually at work on June 23, 1920—Continued.

	Si	lver en	Tot	al.								
					abore						na.	Grand
	19 cenţs.	17 cenţs.	16 cents.	15 cențs.	14 cents.	13 cenţs.	12 cențs.	11 cențs.	Task.	Silver.	Gold.	ţoţal.
Operation and mainte- nance:						2		3	· · · · · · · · · · · · · · · · · · ·	43 1,554	39 519	82 2,073
Building division Electrical division Municipal engi- neering division								13		288	248 113	536
Lock operation Dredging division. Mechanical division Marine division Fortifications						2		1 5		592 1,120 1,720 489 277	169 191 988 181 55	761 1,311 2,708 670 332
Toţal						10		22	1	7,252	2,503	9,755
Supply department: Quartermaster Subsistence Commissary					99	115	72	5	2	1,894 391 1,605	216 36 313	2,110 427 1,918
Cattle industry— plantations Hotel Washington Accounting department Health department Executive department.		_								803 103 10	28 10 250	831 113 260
Superintendent						6		8		837 248 578	245 567 74	1,082 815 652
Transportation Receiving and for- warding agent Coaling stations										1,947 1,173	98 120	330 2,045 1,293
Total	4	4	22	53	101	34	72	82	17	9,771	2,105	11,876
Grand total	8	4	22	53	101	44	72	104	18	17,023	4,608	21,631

Table No. 2.—Force reports, by months, fiscal year 1919–20.

Year and month.	The Pa	anama nal.	Panama	Grand	
	Gold.	Silver.	Gold.	Silver.	ţoţal.
July	3,076	14,729	362	3,209	21,376
	3,560	14,645	396	3,497	22,098
	3,639	14,590	392	3,646	22,267
	3,697	14,080	351	2,247	20,375
	3,704	13,501	343	3,032	20,580
	3,707	14,405	360	3,586	22,058
January February March April May June	3,753	14, 697	375	3,573	22,398
	3,863	14, 593	381	3,041	21,878
	4,105	13, 288	425	3,892	21,710
	4,189	13, 871	448	4,021	22,529
	4,196	13, 630	435	3,472	21,733
	4,165	13, 272	437	3,709	21,583

Table No. 3.—High and low force records, December, 1906, to June 30, 1920, by fiscal years.

	The	Panama C	anal.	Panama R. R., gold and	Total Panam Canal
	Gold.	Silver.	Total.	gold and silver.	and Panam R. R.
lecember	3,881	15,604	19,485	4,416	23, 96
1907.	0,001	10,001	10,400	1, 110	20,00
October.	4,992 4,033	20, 836 16, 987	25, 828 21, 020	6, 139 4, 796	31, 90 25, 81
1908.					
pril ovember	4,950 4,161	21, 168 19, 803	26, 118 23, 964	7,052 5,863	33,17 29,82
1909.					
ctober	4, 376 4, 295	23, 411 20, 583	27, 787 24, 878	7,618 6,393	35, 49 31, 2
1910.	4 552	26.061	30, 837	<b>₩</b> 000	38,6
ecember	4,553 4,705	26, 284 24, 383	29, 098	7, 829 6, 044	35, 1
ecember1911.	4 400	0, 100	00.000		
ine	4, 420 4, 292	25,439 21,795	29, 859 26, 087	7,967 6,603	37, 8 32, 6
1912.					
nuaryugust	4,332 4,122	25, 818 24, 860	30,150 28,982	8, 024 5, 855	38, 1 34, 8
1913.			,	.,	.,.
ugustecember	4, 087 3, 744	30,918 23,209	35,005 26,953	4,957 5,195	39, 9 32, 1
1914	5,711	20,200	20,000	0,100	02, 1
nuary	3, 944 3, 790	23, 824 21, 499	27, 768 25, 289	5,502	33, 2 29, 6
1915.	5, 790	21,499	20, 259	4,343	29, 0
ilyebruary	4,198	22, 846 17, 023	27,044	5,314 2,978	32, 3
	3,088	17,023	20, 111	2,978	23, 0
1916.	3,208	17,982 17,160	21, 190	5,349	26,53
ptember	3, 129	17, 160	20, 289	2, 447	22, 78
nuary	3,552	17, 989	21 541	4,453	25,99
ne	3,552 3,229	17, 989 16, 381	21, 541 19, 610	3,368	22, 9
ly	9 190	17 150	21,338	1 645	01.00
iie	3, 186 2, 763	17, 152 12, 798	15,561	4, 645 3, 067	24, 98 18, 62
1919.	0.005	4			
ebruaryptember	3, 032 2, 639	14,660 12,812	17,692 15,451	4, 200 3, 056	21,89 18,50
1920.					
priletober	4, 189 3, 697	13,871 14,080	18,060 17,777	4,469 2,598	22, 52 20, 37

Note-Figures do not include contractor's forces. If taken into consideration, the greatest working force ever reported was 44,733 on Mar. 26, 1913.

#### LIVING COSTS.

Various studies were made during the year to determine how great had been the advance in the cost of living since 1914. The most exhaustive of these applied expressly to the West Indian, or labor force, but as an index of price changes this holds good, also,

for the whole community. It was found that the percentage increase in four groups from July 1, 1914, to July 1, 1920, was as follows: 

 Food.
 101.11
 Household.
 105.30

 Clothing.
 71.59
 Personal.
 65.47

Weights assigned to these percentages indicated a gross increase of 87.39 per cent in the case of West Indian employees; and this would not vary greatly for American employees on the basis of "necessities" only.

#### COMPLAINTS OF AMERICAN EMPLOYEES.

As a result of a number of conferences with committees of the organized American employees, it was decided before the close of the year to constitute a grievance board to advise the Governor on complaints of American employees. Although the decision was made during the fiscal year 1920, it was not actually put in force until July 13, 1920, when the Governor made the following announce-

1. A board is hereby appointed to make investigations and appropriate recommendations to the Governor in the matter of such complaints of employees concerning working conditions as may be from time to time referred to it. The board will be composed of the engineer of maintenance, two employees as representatives of organized labor, viz., Messrs. W. C. Hushing and Harvey McConaughey, and, in each case, the head of the department or division in whose jurisdiction the complaint

2. The functions of the board are wholly advisory, and its findings and recommen-

dations will not be effective until approved by the Governor.

3. Complaints against administrative policies of the Canal and Panama Railroad will not, in general, be referred to the board; but the Governor may require the board to make recommendations to him on any matter involving the general welfare of

4. The following procedure will be followed preliminary to the reference of com-4. The following procedure will be followed preliminary to the reference of complaints to the board: An individual employee or a group of employees belonging to a labor organization affiliated with the American Federation of Labor will present the complaint to the proper local union or shop committee, who will endeavor to adjust the matter with the immediate superiors of the employee or employees concerned, including division or department heads. Unless adjusted, this complaint will then be submitted to the Panama Metal Trades Council or Central Labor Union, as the case may require in complate forms and if the proper officers or committee. as the case may require, in complete form, and if the proper officers or committees of these bodies can not arrange satisfactory settlement, the case will be forwarded by them to the Governor, with request for reference to the board. Cases which from their nature require immediate action may be submitted to the Governor by the President and Secretary of the Metal Trades Council or Central Labor Union, with the facts and reasons clearly stated. The complaint may then be referred to the board by the Governor, if practicable.

5. The board is authorized to formulate its methods of procedure.

6. It will be noted that the board is to act on the complaints of members of labor organizations affiliated with the American Federation of Labor only. The right of all employees, individually or collectively, whether members of a labor organization or not, to make complaint to the Governor, will be continued.

7. The bureau of statistics will keep a record of all meetings and proceedings of the

8. Additional instructions will be issued from time to time as may be necessary.

#### Compensation of American Employees.

The wages of American employees are fixed with relation to those of similar classes of workers in the United States; and each of the many changes experienced there has been reflected here in some degree. In the United States the problems of employment affect many more people than here; but they are spread over larger territory and are handled by many agencies. In the Canal Zone the Government is the only employer. Its employment problems embrace the features of government, transportation, manufacture, and distribution. It must deal with all of these in such a way as to maintain a proper relationship between industrial conditions of the Canal and the United States, and also among the various classes or units of the Canal organization. The problem of coordination between like classes of workers here and in the United States is complex according as conditions of employment vary in the States and on the Isthmus; but the additional problem of maintaining a proper balance among the various unrelated classes in the Canal organization is always complicated and difficult. For instance, what relation should there be in the compensation of machinists, doctors, clerks,, and bakers?

Heads of departments and divisions find such problems as these occupying a large amount of time. To assist in a proper administrative handling of questions bearing on the compensation of clerks, and related classes, the Governor has referred such cases to a committee composed of the executive secretary, the auditor, and the chief quartermaster. This committee has acted on scores of cases, and it is believed has succeeded in keeping a proper balance in the rates of pay of employees in administrative work. Such matters as can not be settled by heads of departments and divisions, or by committees of

these officials, have been referred to the wage board.

The wage board continued to function in accordance with the rules laid down in the circular letter of March 31, 1919, which was quoted in full in my annual report for 1919. The work of the board is referred to here because the statistical and clerical service necessary for its functioning have been rendered by this department. The equivalent of the time of two employees has been devoted exclusively to this work. The board has been composed of the engineer of maintenance, Col. Jay J. Morrow, representing the administration, and Mr. W. C. Hushing, chosen by the central body of the various labor organizations, to represent the employees. Of the many cases considered, the following few are instanced, as revealing the variety of classes affected; and the character of determination reached by the board or by the Governor after the board had made reports to him.

Building trades.—Rates paid on "cost-plus" contracts under the construction division of the Army in the United States were used as bases for adjustment of rates of bricklayers, carpenters, painters, plasterers, plumbers, metal lathers, and tile setters in the Canal service most of whom were employed in the construction of concrete buildings at the new Army posts at Miraflores and Gatun. On account of the constant advance of these rates in the United States, an adjustment was made every two months on the Isthmus, beginning August 1, 1919.

Metal and shop trades.—On June 8, 1920, the Navy Department announced that the compensation of employees in the navy yards would be increased July 1, 1920, by \$240 a year, the so-called "bonus." The pay of all Americans on the Isthmus doing work similar to that of navy yards, and of employees drawn from the shops trades is based on rates paid in the navy yards. An adjustment of the rates of these employees, numbering fully one-third of the force, was in progress at the close of the fiscal year. Fifty distinct occupations or crafts are affected by this one adjustment.

Municipal engineering foreman.—These rates were adjusted on the basis of a differential of 5 and 10 cents less an hour than the average of rates for foremen of carpenters, masons, and plumbers, and leadingmen of pipe fitters and ironworkers; all of which classes of work are supervised to some extent by these foremen.

Chauffeurs.—An adjustment was made on the basis of an average of rates paid by the American Railway Express Co., Post Office Department, Motor Transport Corps, and Rock Island Arsenal, because the work on the Canal Zone includes some of each of these

classes.

Bakery foremen.—These rates were adjusted with relation to rates in 26 bakeries in the United States in 19 cities and 14 different States, from which comparable data were received, consideration being given to conditions of employment as well as rates.

Pilots.—The rates for this class were based on pay of pilots at Cape Cod Canal while that waterway was being operated by the Govern-

ment.

Railroad positions.—The decisions regarding wages of employees on the railroads of the United States are necessarily complex, because the service is complex. To apply these rates to conditions on the Isthmus adds other complications. Yet this must be done. The rates for transportation and car-shop employees are determined on this basis. During the year the schedules for hostlers and car-shop employees were adjusted on the basis of changes in the United States. At the close of the year an announcement of a further, and general, adjustment in the United States, effective May 1, 1920, was made and this will be the basis for further adjustment on the Isthmus.

Construction and engineering foremen.—This term covers a large class on the Isthmus, including foremen who are not actually engaged in construction work but are coordinated with this class. The scale of rates was determined with reference to wages paid by the Engineer Department, United States Army; the Reclamation Service; Light-

house Service; and the District of Columbia.

Stevedore foremen.—The rates for this class were made with relation to the rates fixed by the National Adjustment Commission for long-shore service at North Atlantic ports, due regard being paid to proper coordination on the Isthmus. A readjustment following changes in the United States was in progress at the close of the year.

Other cases.—Among other cases considered were the following: References of cases appealed to the Secretary of War and sent by his request to the wage board, plumbers, carpenters, heavy forgers.

Application of bonus of \$240 to certain administrative positions and proper coordination of such positions with similar ones in the United States.

New rates for nurses on account of 20 per cent increase in the rates

for Army nurses.

Apprentices of mechanical trades, blacksmiths, bureau chiefs, butchers, cement finishers, chauffeurs, chemists, clerks of various classes, cold storage plant employees, cost accountant, cremator and embalmer, customs inspector, dispensary assistant, dredgemen, electricians, entomologist, filter operator, fire truck operator, floating crane officers, foremen of various classes, inspector of hulls and boilers, inspector of motor cars, instructor of apprentices, laundrymen, millmen, marine draftsmen, marine officers, patternmakers, pharmacists,

physicians and surgeons, planners, pontoon bridge operators, postoffice positions. poultry experts, pumpman, quarantine custodians and inspectors, restaurant managers, sanitation inspectors, school teachers, station engineers, superintendent of leper asylum, technician, telephone inspector, weighmaster.

## COMPENSATION OF WEST INDIAN EMPLOYEES.

In continuance of the policy of adjusting the wages of West Indian employees at such times as changes in the cost of living seem to justify this course, two increases were made during the fiscal year, and a third was authorized, effective July 1, 1920. In these adjustments the rates effective in 1914 are taken as the base, and the minimum rates and earnings are given primary consideration, since it is on the lowest paid classes of workers that the burdens of increases in living costs are heaviest. The following statement shows the general trend of wages for the common labor class since 1914:

					C	om	mo	n l	abc	rei	rs'	rai	tes.							
																	Ce	nts ar	ı hou	Γ.
May	1,	1914	ŀ	 										 	 	 	 	10		
Jan.	1,	1917	٠	 										 	 	 		12		
Oct.																			nd 1	14
May																				
Nov.																				
July																				
Feb.																				
July																				

In 1914 the men worked 9 hours a day and their earnings were therefore, 90 cents; since that time all of the force has been placed on the eight-hour basis, so that in determining the present rates the

daily earnings are compared rather than the hourly.

In December, 1919, a committee representing an organization of the West Indian employees called on the Governor and stated that the wages paid at that time were not sufficient to maintain the employees at that standard of reasonable decency and comfort which he had recognized as incumbent upon the Government and the Panama Railroad Company to insure. The Governor referred the matter to a board composed of the heads of departments and divisions, which has acted on such questions for years past. Meanwhile he directed that a special inquiry be made by the labor inspector, and that data

of living costs be brought up to January 1, 1920.

The board met on January 2, 1920, and considered the report of the labor inspector and such data as were available on living costs. On January 9, the board heard a committee of West Indian employees and stenographic notes were taken of the salient parts of the testimony. The committee was asked to submit data in support of the claims made by it, and also was asked to meet with the chief quartermaster to discuss features of a lease for land and quarters at Las Cascadas, where The Panama Canal is endeavoring to establish an agricultural colony of West Indians to be used as a reservoir to supply laborers for intermittent or casual work. No data were submitted, the committee stating that those in the hands of the Canal authorities were sufficient. The committee did not avail itself of the opportunity to meet with the chief quartermaster to discuss the terms of the leases.

On the basis of the information in its possession the board recommended to the Governor on January 24, and the Governor approved, the following advances: Hourly rates, 2 cents; monthly rates, \$5;

per diem, 15 cents.

The Governor also directed the board to meet thenceforth on the 15th of the last month of each quarter for the purpose of determining whether changes in living costs during that quarter were such as to indicate changes (either advances or reductions) in rates of pay. The board, in turn, directed that a method of figuring living costs and changes therein be adopted on the basis of actual purchases by West Indian employees at the commissaries for a period of three months. Such a study was made and the results of this form the basis on which rates are now determined. It is pertinent that the new and more elaborate studies confirm the conclusions formerly reached, when a few leading articles of food and clothing were used as indices of changes in prices.

On the basis of changes in living costs no adjustment was found necessary as of April 1; but an adjustment for July 1 was recommended by the board at its meeting in June. This adjustment is an advance of 2 cents on hourly rates, \$2.50 on monthly rates, and 10

cents on per diem rates.

## STRIKE OF WEST INDIAN EMPLOYEES.

At the time it was found that an increase of 2 cents an hour in rates of pay should be given on February 1, 1920, the organization of West Indian employees had demanded an increase of 7 cents an hour, and certain other changes in conditions of employment. The refusal to grant these demands was met with a strike on February

24, when approximately 15,000 to 17,000 quit work.

The employees had been incited to this action by some white men from the United States who organized them, took their money, and then deserted them. Such men know nothing about conditions in the Tropics, are not familiar with standards of living in the countries bordering the Caribbean, and entirely ignore the fact that wages are higher at The Panama Canal and prices of necessities lower than in any of the cities of the Caribbean coast and islands. There are two distinct classes of workers in the Canal force—American citizens, who live according to the standards of their home communities, and West Indian negroes, whose standards of living, although higher, are fairly comparable with those of their home communities. The wages of each class are representative of a liberal allowance for maintaining its accustomed standards.

Realizing that the mass of these men had been misled and misinformed, the Governor announced that all who were not back at work on February 26 would be considered as having voluntarily left the service without due notice. Rules of long standing provide that in such cases reemployment may be only at a lower rate of pay than that received at the time of quitting. Meanwhile steps were taken to clear the Canal quarters of persons not employed, and to fill the places of the men who had quit work. On March 2 the strike leaders officially advised the men to return to work; and a few days

later the force was at its normal strength.

Except for about 2,000 West Indians and native laborers who remained loyal to the work, the strike of silver-roll employees was complete. Thanks to the readiness of the American employees to turn to whatever work was given them to do, it was possible to keep the Canal in operation, to feed and provide the force with water and light.

Shortly after the strike a request was made to the British Government by some of the West Indian employees for an investigation. Such an investigation was conducted with the full consent of the United States Government. The Panama Canal placed at the disposal of the special agent of the British Government all of the facts in its possession, and in every way facilitated the inquiry. The report had not been made public at the close of the fiscal year.

## EMPLOYEES AND THE LAND.

The concentration of Canal work at the two termini, the difficulty of moving large numbers of men by railroad each morning and evening from interior points to the termini, and the policy of depopulating the Canal Zone based upon sanitary and military considerations, have resulted in taking the West Indians from the small farm and hamlet conditions which existed during the construction of the Canal and crowding them into the cities of Panama and Colon. This condition was called to the attention of the Congress in 1917 with a request for funds to construct quarters for the employees in the Canal Zone; but so far no appropriation has been made for this purpose. The result is that between ten and fifteen thousand men and their families, accustomed to country life and to raising a part at least of their food, are unable to assist themselves by gardening, and at the same time feel forced to adopt the city standards of dress and entertainment. The board on rates of pay for silver employees recommended to the Governor that steps be taken to encourage gardening on the part of those employees who live near unfenced lands in the Canal Zone; and this has been done. In addition, the project for establishing a reservoir of laborers at Las Cascades in the old buildings of the depopulated village, and allotting to the tenants plots of land adjacent for gardens, has been worked out. So far, however, the West Indians seem reluctant to avail themselves of the opportunity offered.

Publicity.

During the year more effort has been devoted to advertising the Canal and the facilities at its termini for meeting the needs of ships. Authority was secured from the Secretary of War to expend not more than \$75,000 in the placing of advertisements in representative shipping and commercial papers in Europe and Japan. Action was deferred, by direction of the Governor, on account of the coal shortage, but beginning in November a quarter-page advertisement has been placed in the London Times Trade Supplement and 6-inch advertisements (3 inches deep by 2 columns wide) in each of the following: Lloyd's List, and Fairplay in England; Courant, Holland; Lloyd Anversois, Belgium; Lloyd Francais, France; Mercantile and Ship Gazette, Norway; Diario del Comercio, Spain; and Børsen, Denmark, at a total annual cost of \$18,990.61. The form

of the advertisements is being changed approximately once a month; a series of advertisements is now running, featuring, successively, the

various facilities for shipping.

Material has been furnished to shipping magazines, commercial papers, and the general press for articles on features of the Canal and the traffic through it and at its termini. Most of this has been in the form of completed articles, with photographic illustrations, though in other cases material has been furnished for the compilation of articles either in response to requests or voluntarily offered to magazines. Cable dispatches to news-gathering organizations on

events of particular interest have been sent regularly.

A folder containing con ise descriptive, statistical, and historical information about the Canal, with a relief map, was published in an edition of 10,000 for general distribution. A folder devoted to the Canal in its relation to the foreign trade of the United States was published in an edition of 5,000 for distribution at the Seventh Annual Foreign Trade Convention. Preparation of a new Official Handbook was completed and it will be published on the arrival of the photoengravings from the United States. A folder entitled "Panama, a Place to Visit," has been published in an edition of 5,000, under the direction of the tourist committee, and given general distribution, principally through travel bureaus.

The tourist committee was established primarily as a means of publicity, with the idea of availing of the word-of-mouth commendations which are given and the articles written by those who have visited the Canal. Its purpose is to encourage visitors and to see that they are cared for comfortably while on the Isthmus and given facilities for seeing the Canal and its appurtenances. Its personnel consists of the master of transportation of the Panama Railroad, the manager of the Washington Hotel, the manager and assistant manager of the Tivoli Hotel, and the publicity man of the Canal. The committee has engaged actively in its task and is securing good

results.

Direct mail advertising forms a considerable part of the publicity. The Panama Canal Record, the Sailing Directions, the Tariffs, and all circulars and notices affecting marine interests are mailed to shipping interests all over the world, through this and the Washington office, and especial attention is paid in this office to furnishing information to the managing offices of newly established companies which may make use of the Canal. The answering of all but routine inquiries about shipping and traffic is handled as a part of the publicity service.

The Panama Canal Record has been continued as the weekly official bulletin of The Panama Canal and the Panama Railroad, publishing all of the circulars with general bearing issued by both, the monthly reports of the Governor, and a variety of news and statistical articles bearing on the operation of the Canal and its adjuncts. Free distribution is made to steamship and commercial interests, public libraries, the employees of the Canal and railroad on the gold roll, consular officials all over the world, and other governmental interests on the Isthmus and in the United States. Distribution on and from the Isthmus has been about 5,500 copies a week; distribution through the Washington office, about 2,400 copies, with 100 extra copies of numbers containing special articles for which there

is likely to be demand; and 350 copies are reserved for binding in the permanent volumes. The subscription rate to private interests has been continued at \$1 a year for those reached under domestic postal rates, and \$1.50 for those for whom foreign postage is paid. Receipts from subscriptions and sales during the fiscal year amounted to \$205.18.

## ORGANIZATION OF EXECUTIVE DEPARTMENT.

The organization of the department has remained unchanged during the year, although there have been many changes in personnel. The gold roll force compared with the two previous years was:

	June 30, 1918.	June 30, 1919.	June 30, 1920.
General Record bureau Personal bureau Bureau of pay rolls Correspondence bureau Property and requisition bureau Bureau of clubs and playgrounds	19 24 12 42 22 15 5 25	20 24 12 46 23 18 7	21 23 12 46 22 16 6
Total	164	181	213
Division of civil affairs	113 174 65 5 14 4	96 174 72 5 14 5	81 182 78 5 14
Total	539	547	573

#### THE EXECUTIVE OFFICE.

The work of the executive office was continued under direction the chief clerk, Mr. J. H. Smith, with a total gold roll as shown above. A summary of the work done by the various bureaus follows:

#### BUREAU OF CLUBS AND PLAYGROUNDS.

Clubhouses were operated for gold employees at Balboa, Ancon, Pedro Miguel, Gatun, and Cristobal; also a boat house at Fort Amador. Clubhouses for silver employees were operated at La Boca, Red Tank, Paraiso, Gatun, and Cristobal. Playgrounds were operated at Balboa, Ancon, Pedro Miguel, Gatun, Cristobal, and Colon Beach for the children of gold employees.

During the year changes were made on the buildings at Balboa and Cristobal. The reading room at the Balboa clubhouse was enlarged, the side walls of the building removed, book cases installed in the library, a librarian put in charge of the reading room and library. With the completion of these changes, the main floor of the Balboa clubhouse has been made considerably more attractive and useful.

The main floor of the Cristobal clubhouse has been enlarged, the side walls of the building removed, the billiards and bowling located close together. The entertainment hall on the second floor has been removed from one end of the building to the other, making the enter-

tainment hall more comfortable on account of the prevailing breezes being from this end of the building.

New equipment has been received in the various gold clubhouses,

consisting of phonographs, furniture, and billiard tables.

Two bowling alleys are being removed from the silver club at Paraiso, where they are little used, to the gold clubhouse at Pedro Miguel, where there has been a great demand on the part of the bowlers for two additional alleys.

Local entertainments were given as usual, and, in addition, entertainers have come down from the States about once in two months. Moving pictures are exhibited in all clubhouses; song services on Sunday nights at Ancon, Gatun, and Paraiso; study clubs at La Boca.

A boys' work director was added to the personnel, and has the

work well in hand at Balboa.

The Y. W. C. A. is handling the girls' clubs in Balboa and Cristobal,

assisted by this bureau.

Following is the report of the director of physical education and play.

GRAMMAR SCHOOL PHYSICAL EDUCATION.

(a) Classroom work.—A change in the character of the program of physical work conducted in the five white Canal Zone grammar schools by the bureau of clubs and playgrounds, for the division of schools, was instituted at the beginning of the 1919 school year, last October, to take the place of the 25-minute supervised recess held on the school playgrounds the previous year. The new program provides for lessons in marching, graded mass calisthenics, rythmic steps, in the school room 10 minutes each day, or, when the weather permitted, on the lawns near the school buildings. The new lessons were demonstrated to each class by the physical director of the local clubhouse once every two weeks, and reviewed daily by the classroom teacher. At the close of the school year over 200 children took part in a special school program on the lawn in front of the Balboa school building. This program consisted of a flag drill, circle games, pyramid work, apparatus work, tumbling, and push ball.

(b) Gymnastic exercises.—Gymnastic classes for grammar school boys were held in the close and consisted of setting up over the games.

the clubhouses, and consisted of setting up exercises. apparatus work, and games.

(c) Tennis.—The upper grade boys and girls were permitted to use the tennis courts, under supervision, several afternoons each week. All balls and rackets were furnished by the bureau.

(d) Athletics.—The annual inter-class track and field meet for boys and girls held on

the Balboa athletic field, May 29, 1920, was a great success, the seventh grade competing against the eighth, the fifth against the sixth, the third against the fourth and

the first against the second.

(e) Baseball.—A four-team baseball league for older boys was organized and a series of games played on Saturdays and holidays during the months of January, February, and March, and a playground league for boys of 90 pounds and under was organized, and games played off on Wednesdays and Fridays, after school, during the same period.

#### HIGH-SCHOOL PHYSICAL EDUCATION.

(a) Physical training.—Classes for high-school students were held in the clubhouse gymnasium after school, from 3.20 to 4.20, two periods a week. The program for boys consisted of marching, calisthenics, apparatus work, wrestling, and team games. The program for girls consisted of formal gymnastic apparatus work, gymnastic and esthetic dancing, and team games, special emphasis being placed in posture. An examination on posture was held at the close of the school year, and each girl was required to illustrate her ideas of good and bad posture, by means of a chart. Some very clever work was done, and the best charts were placed on exhibition in the Balboa high-school auditorium.

(b) Tennis.—The students of the high schools were given an opportunity to learn how to play tennis, free of charge, on courts operated by this bureau. Several weeks were spent in teaching the rudiments of the game, and as soon as the beginners were able to handle the rackets an inter-class tournament was held, consisting of singles of

boys and girls, doubles, and mixed doubles.

(c) Baseball.—Teams were organized in both the high schools, but were handicapped as usual by lack of opportunity for competition. A few games were played with teams composed of boys employed in the shops, older grammar-school boys' teams, teams composed of men from the Army and Navy stationed on the Zone, and an occasional game with crews from visiting ships. A large number of Balboa and Cristobal high-school boys played on teams in the Sunset and Twilight leagues.

(d) Athletics.—The annual inter-class track and field meet for boys and girls was held

on the Balboa athletic field, April 10, 1920, and a dual track meet between the two

high schools on June 10, 1920.

(c) Swimming.—Swimming is one of the most important branches of physical education, and classes were held in the Balboa pool twice a week throughout the season for grammar-school and high-school boys and girls, under the personal supervision of the swimming instructor. All members of the senior class of the Balboa High School were required to pass a rigid test before graduation, consisting of swimming, life-

saving, and resuscitation.

In addition to the regular free swimming classes conducted for school children, the Balboa swimming pool continues to attract a steady stream of paid patronage from the Balboa, Ancon, and Corozal districts, and is increased from time to time by crews from visiting ships in transit through the Canal. Every effort is made to make the work interesting. An exhibition was staged for the benefit of approximately 1,000 officers and men from a Japanese war vessel. Exhibitions of water pole games, diving, and swimming were arranged between the local high school and visiting crews of United States and British naval vessels. By special arrangement with the bureau of clubs and playgrounds, the Army and Navy Y. M. C. A. has furnished free swims, averaging approximately 800 per month, to United States service men stationed on the Zone, and crews of English and American war vessels in transit through the Canal. Gen. Pershing presented the Grieser silver trophy cup to a group of children who had qualified in swimming, diving, and life-saving.

In view of the large participation in this more or less hazardous exercise, it is pleasing to note that there were no serious accidents in the Balboa pool during the year.

Bowling.—Grammer-school and high-school boys and girls were permitted to use the clubhouse bowling alleys, free of charge, before 4 p. m. daily, and Saturday mornings, under supervision. Local mixed duck pin leagues were rolled off after 6 p. m., for men and women in the various communities, under the direction of the bowling alley manager, and a Pacific duck pin league, consisting of four teams, bowled a series of games during February and March. The alleys in the terminal clubhouses are always in great demand by crews from visiting ships.

#### PLAYGROUNDS.

New playsheds were added to the equipment at Pedro Miguel and Gatun, and one shed was erected near the Folks River Beach in New Cristobal, for the children living in that community. These sheds are approximately 42 by 80 feet, enclosed with chicken wire. Dirt floors have proven to be very unsatisfactory, and experiments were made with floors of asphalt and concrete, at Balboa and Pedro Miguel, and it was found that a steel float finished floor would be satisfactory for all purposes in this climate. We propose to install these in all of our sheds, as soon as funds are available.

Sand shelters and wading pools were also added to the equipment at Pedro Miguel and Gatun. These additions are very popular with the younger children, and we propose to build one of each on the playgrounds at Ancon and New Cristobal.

The communities of Pedro Miguel and Gatun celebrated the opening of their new playsheds with appropriate exercises. Several hundred people were in attendance at each place.

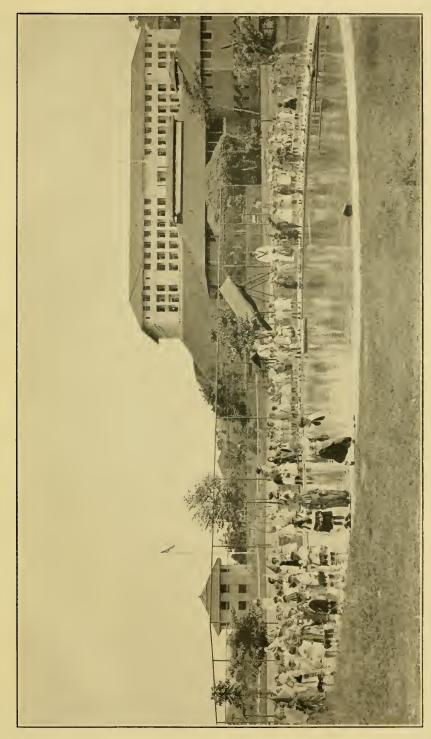
The playground programs were as follows:

1. Children 3 to 6 years of age were in attendance from 9 to 10.30 a.m. daily, and were taught singing, games, dances, action plays, paper folding, and crayola work, and a half hour or more was devoted to story telling and free play. Special community parties were held from time to time, in which the children took an active part in the programs, and assisted in preparing for and entertaining parents and visitors.

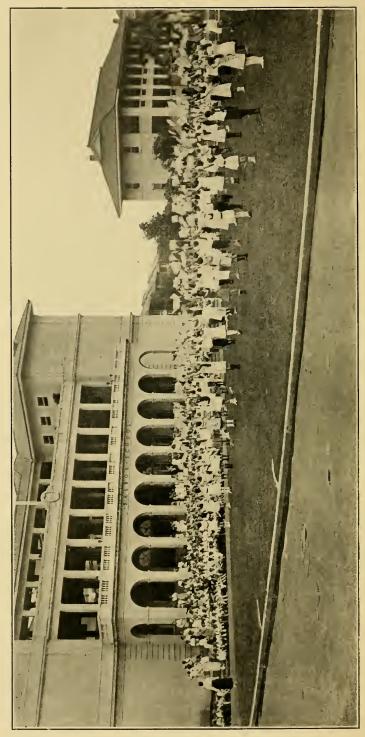
2. Grammar school children from 6 to 12 years of age were assigned two to three periods a week, from 3 to 4 p. m. Instructions were given in dramatic action plays,

gymnastic drills, ball games, and free play.

3. Grammar school boys and girls over 12 years of age, were given two or three periods per week, on the playground, and in the clubhouse in inclement weather. The program for this group consisted of gymnastic drills, apparatus work, group and team games.



BALBOA, CANAL ZONE, PLAYGROUNDS FOR CHILDREN. HALLOWE'EN PARTY. OCTOBER, 1919.



BALBOA, CANAL ZONE, SCHOOL. FLAG DRILL. CLOSING EXERCISES. JUNE 25, 1920.

## SUMMARY OF ATTENDANCE ON PLAYGROUNDS NOT INCLUDED IN CLUBHOUSE ACTIVITIES.

Playgrounds supervised, approximately, 312 days per year.  Average daily attendance of children 3 to 6 years of age, on 5 playgrounds  Average daily attendance of children 6 years and over, on 5 playgrounds	552
Total average daily attendance all groups, on 5 playgrounds	717
TOTAL ATTENDANCE.	
Balboa:	
Younger childrenOlder children	25,507
Older children	41,391
Ancon:	
Younger childrenOlder children	9, 357
Older children	101, 673
Pedro Miguel:	
Younger children	2,754
Older children	2,534
Gatun:	
Younger	5, 243
Older children	7,779
Cristobal:	
Younger	8,553
YoungerOlder children	<sup>1</sup> 18, 993
m / 1 C	000 704
Total for year	223, 784

#### OUTINGS, CAMPS, EXHIBITIONS, ETC.

Two separate boys' camps of from ten to fifteen days each were conducted under supervision of the bureau at Boquette, in the Province of Chiriqui, Republic of Panama, and one girls' camp, in cooperation with the Y. W. C. A., at Taboga Island, Republic of Panama, last year. All-day hikes, and one-day camps were conducted on Saturdays and holidays throughout the dry season. Children's entertainments were promoted on the playgrounds Hallowe'en; Decoration Day was observed on all playgrounds by appropriate, patriotic children's exercises. A community Christmas pageant, with over 165 children and 50 adults participating, was directed and staged on the lawn in front of the administration building Christmas Night by employees of the bureau.

#### RECORD BUREAU.

The work of the record bureau was carried on with a force of 23

gold and 28 silver employees.

In addition to maintaining the current files and the permanent records of The Panama Canal and Panama Railroad, the bureau has charge of the accumulation and classification of records turned in by field offices; the publication of all rules and regulations, rates, circulars, etc.; the custody of documents and publications; the custody of timekeeping records; the indexing and recording of engineering records, including maps, drawings, and photographs; the receipt, distribution, and dispatch of correspondence and mail matter for all offices in the administration building other than the accounting department; the furnishing of messenger service for entire administration building; the operation of the Canal Zone library system.

The library has five branches in the five Panama Canal clubhouses, each in charge of a library attendant. The clubhouse library attendants are on the payrolls of the bureau of clubs and

<sup>&</sup>lt;sup>1</sup>The attendance on the Ancon and Cristobal playgrounds was increased materially by reason of the playgrounds being close to the school and used by the school children under supervision at recess times, and before and after school.

playgrounds, but under the supervision of the librarian. There is

also a juvenile library at Balboa grade school.

There have been 5,111 volumes accessioned, shelf-listed, classified, catalogued, and prepared for circulation. On June 30, 1920, there were 1,139 registered borrowers, with a circulation of 1,625 volumes per month.

#### PERSONNEL BUREAU.

This bureau maintained the personnel file of each gold employee, accounting for the history of each employee's service, salary status, credits for leaves of absence, transportation, the organization status of the different divisions and bureaus, and the records of all new employees requisitioned from the United States. Individual reports of leave of absence totaled 28,000. Printed leave orders issued for the files of both the Isthmian and Washington offices numbered 159. Approximately 4,000 requests for free or reduced rates of transportation for employees and members of their families were issued by the bureau. Detailed records, approximating 5,000, of every position accredited to the organization of each division or bureau within the Isthmian organization were kept, showing the status of the position, whether filled or not, its record of salary status and incumbency. There were 538 authorities issued for free steamship transportation; 2,671 for reduced rates on the Panama Railroad Steamship Line; and 608 for employees' rates on various other steamship lines. As in many cases the authorization issued covered transportation for both the employee and family, the total number of persons for whom transportation was authorized greatly exceed the number of authorizations. Additional free or reduced railroad transportation on the Isthmus included approximately 4,000 employees' free 24-hour trip tickets over the Panama Railroad, 1,575 employees' 120-trip official business passes, and a miscellaneous number of school passes and individual card passes.

Under the provisions of an act passed by the Sixty-sixth Congress for the retirement of employees in the classified civil service, the bureau arranged to commence the work of examining personnel files for the necessary report on employees who may be entitled to the

benefits of the act.

The increasing number of changes in rates of pay, and the numbers of transfers within the Canal organization tended to increase the work of this bureau for the year. The actual rate of turnover for the year was, however, less than for 1917 or 1918 during which periods the separation and return of employees who entered military duty caused an unusual amount of detailed work.

#### PROPERTY BUREAU.

Four of the five sections into which this bureau is subdivided handle the actual property accounting for the entire Canal and railroad organization; the other handles work requests, requisitions, expendable invoices, correspondence and files. Accounts are carried with all responsible officials, approximating 160 for the fiscal year. The supervision of these accounts involves the renewal of memorandum receipts, and a physical check of property twice annually.

In addition the accounts of any responsible official entering on leave, under transfer or resigning are checked in each instance. This work includes the Canal and railroad, for both of which the transfer of office equipment, and the preparation of requisitions and specifications for the purchase of new equipment are handled. Based upon a count of the average of the different items shown for a period of six months' business, the following statement covers the principal items handled during the fiscal year:

Handled, posted, and filed:	
Property vouchers	20,294
Surveys	1,580
Foremen's orders	5, 838
Transfer receipts	1,624
Prepared:	
Work requests	2,760
Requisitions	6,018
Expendable invoices	3,006
Property invoices	5, 440
Memorandum receipts renewed	1, 112
Changes in responsible officials.	652
Accounts requiring recheck	182
Entries on property returns	73,030
Inspection trips and inventories	930
Letters written.	4, 214
Form letters and tracers	5, 796
	274, 848
Pages of property returns transferred to new returns semiannually	91, 156

#### BUREAU OF PAY ROLLS.

The work of this bureau is best presented in the following tabular form:

Table No. 4.—Statement of work of the bureau of pay rolls, July 1, 1919, to June 30, 1920.

	Coupo	on books.	Collected for rent and electric current.			
	Number. issued.	Value.	Pay roll deduction.	Cash.		
July	82,641 81,016 81,525	\$419, 145, 00 444, 662, 50 445, 055, 00 457, 580, 00 448, 916, 92 551, 930, 95	\$10, 192, 39 9, 900, 47 9, 996, 18 10, 127, 26 10, 004, 15 9, 928, 05	\$171. 04 137. 57 149. 19 157. 73 149. 80 151. 72		
January 1920. February March April May June	75, 674 64, 667	480, 923, 60 400, 745, 86 423, 975, 10 483, 050, 32 499, 855, 02 512, 850, 97	9, 951, 03 282, 09 13, 854, 25 9, 445, 84 9, 864, 89 10, 048, 23	209, 93 219, 63 223, 70 240, 20 236, 55 215, 36		
Total	933, 809	5, 628, 691. 24	113, 654. 83	2, 262. 42		

Table No. 4.—Statement of work of the bureau of pay rolls, July 1, 1919, to June 30, 1920—Continued.

		Payr	eccipts prepare	ed—Panar	ma Canal.	
		Gold.			Silver.	
	Num- ber.	Gross amount.	Net amount.	Num- ber.	Gross amount.	Net amount.
1919. July	3,585 3,677 3,691 3,794 3,781 3,771	\$633, 915, 77 640, 909, 20 642, 450, 96 666, 703, 08 650, 611, 09 698, 258, 81	\$380, 209. 02 389, 811. 19 384, 105. 13 400, 411. 55 501, 858. 12 526, 520. 93	16,583 15,289 14,718 14,471 13,151 13,996	\$575, 009. 14 573, 868. 42 554, 570. 90 573, 160. 50 499, 327. 85 544, 732. 46	\$337,051.99 319,680.79 312,691.22 328,662.99 281,446.66 274,027.14
1920. January February March April May June	3,891 3,936 4,230 4,218 4,213 4,160	708, 803, 62 748, 375, 48 795, 322, 95 788, 820, 91 760, 510, 14 804, 834, 44	553, 503, 92 590, 135, 48 634, 578, 77 622, 488, 69 598, 151, 87 639, 779, 18	14,019 15,330 16,514 14,382 13,974 13,195	560, 200. 84 479, 855. 55 530, 345. 27 564, 294. 37 546, 262. 86 546, 489. 24	323, 185, 21 268, 405, 83 340, 231, 36 340, 966, 89 313, 685, 62 304, 959, 05
Total	46, 947	8, 539, 516. 45	6, 221, 553. 85	175,622	6, 548, 117. 40	3,744,994.69
		Pay rec	eipts prepared	-Panama	Railroad.	
	-	Gold.			Silver.	
	Num- ber.	Gross amount.	Net amount.	Num- ber.	Gross amount.	Net amount.
1919. July August September October November December	879 749 779 757 729 788	\$143, 826, 06 139, 973, 49 137, 172, 14 131, 340, 22 127, 367, 47 134, 599, 34	\$89, 829, 08 84, 971, 05 82, 293, 71 76, 371, 79 94, 244, 08 95, 323, 87	12,700 14,876 14,593 13,338 12,840 16,951	\$246, 791, 89 284, 707, 48 277, 299, 05 245, 526, 18 237, 171, 56 320, 179, 59	\$169, 014, 93 200, 124, 93 196, 503, 94 163, 547, 50 158, 329, 93 222, 241, 43
July August September October November	749 779 757 729	139, 973, 49 137, 172, 14 131, 340, 22 127, 367, 47	84,971.05 82,293.71 76,371.79 94,244.08	14,593 13,338 12,840	277, 299, 05 245, 526, 18 237, 171, 56	200, 124. 9 196, 503. 9 163, 547. 5 158, 329. 9

#### BUREAU OF STATISTICS.

This bureau continued its routine work of compiling vital statistics, which form part of the report of the chief health officer; statistics of navigation, which form part of the report of the marine superintendent; the handling of wage authorizations; and the compilation of matter for The Panama Canal Record. Numerous special studies of the Canal services were made for publication, or in answer to private inquiries.

Publicity, wage adjustment, cost of living studies, and the supervision of the decennial census formed part of the work carried on by this bureau.

#### SURVEYING OFFICER.

The surveying officer is charged with the inspection and making recommendation to the Governor as to disposition to be made of equipment or material which has become unserviceable, to make recommendations for relief of accountability for lost or damaged property, and to pass upon the responsibility of officers and employees for such loss or damage. He acts as chairman of the board of appraisal, property board, and board on destruction of public records; and handles loans of property on a rental basis, except leases of land. During the year the following surveys and appraisals were passed:

Two thousand nine hundred and ten formal requests for disposition on surplus, obsolete, unserviceable, and deteriorated property, which were disposed of by destruction, scrap recovery, sales to individuals and companies, and transfers to other departments of the Govern-

ment. Total value, \$1,324,350.18.

Two hundred and twenty-one individual appraisals of plant, sal-

vaged material, etc. Total value, \$496,101.65.

Thirty-four requests for destruction of obsolete public records, all of which were burned, the paper having no salvage value.

Twenty-two requests for loan of property (since February, 1920),

revenue, \$747.28.

## DIVISION OF SCHOOLS.

The division continued under the superintendence of Mr. A. R.

A survey of the schools during the past four years is given in the

following statement:

	1917	1918	1919	1920
Number of school buildings	19	17	16	16
Buildings erected and converted	. 3		2	
Number of employees in division	. 70	81	95	100
Number of supervisory force	. 2	3	3	3
Total expenditures (approximate)	\$87,000		\$149,000	\$192,000
Estimated value of school property	\$100,000	\$560,000	\$560,000	\$560,000
Net enrollment	2,373	2,774	3,006	3,485
White schools	1,518	1,764	1,778	2,004
Colored schools	.  855	1,010	1,228	1,481
Per capita expense of maintenance (approximate) based				
on net enrollment	\$36.66	\$50.83	\$49.67	\$55.10
Total days of attendance	.   295, 697.0	350, 619.0	371,602.5	397,970.0
White schools		239,527.5	242,678.5	271, 143.0
Colored schools	85,915.0	111,091.5	128, 924.0	126,827.0
Average daily attendance	1,709.2	1,963.2	2,178.5	2,453.4
White schools	. 1,212.6	1,322.9	1,423.3 755.2	1,588.5
Colored schools		640.3		864.9
Absence of teachers on account of sickness, days	234.5	312.5	374.5	441.0
Average monthly wages of teachers:				21.50 4/
White		\$125.58	\$141.88	\$158.46
Colored	. \$65.00	\$67.67	\$71.50	\$76.00
Tuition collected	. \$3,510.19	\$4,364.64	\$4,057.00	\$5,358.00

## The enrollment by schools was as follows:

	White	schools.	Colored schools.			
	Gross.	Net.	Gross.	Net.		
Batboa high. Cristobal high. Ancon—grades. Batboa—grades. Pedro Miguel—grades. Gatun—grades. Cristobal—grades. Paraiso—grades. Empire—grades.	406 814 150 175 489	179 62 347 722 133 126 435	506 297 365 351 381 288	393 208 231 223 233 193		
Total	2,278	2,004	2,188	1,481		
Total white and colored	14,466	2 3, 485				

<sup>&</sup>lt;sup>1</sup>Compared with 3, 405 for the school year 1918–1919. <sup>2</sup>Compared with 3, 006 for the school year 1918–1919.

## The enrollment by grades was as follows:

Schools.	Grade.												
SCHOOLS,	1	2	3	4	5	6	7	8	9	10	11	12	Total.
WhiteColored	338 601	258 218	254 231	274 194	197 147	169 39	150 38	123 13	88	75	38	40	2,004 1,481
Total	939	476	485	468	344	208	188	136	88	75	38	40	3,485

In addition to the regular school work, which was conducted according to the highest standards in schools in the United States, the following matters seem of special importance or interest.

Physical examinations were conducted during the year in both the white and colored schools and proper remedies were prescribed for

defects.

Manual training and household art classes were held at Cristobal for the white pupils of Gatun and Cristobal Schools and at Balboa for the white pupils of the Pedro Miguel, Ancon, and Balboa Schools.

Physical training and athletics were continued in the schools, under the supervision of the bureau of clubs and playgrounds. A more extended reference to this work will be found in the report of that bureau. The physical instruction applies to both girls and boys.

Music was continued and satisfactory progress was made, the

improvement in the grade schools being especially marked.

At Cristobal a night school for Spanish was conducted, and at Balboa a night school for English, French, history, Spanish, shorthand,

and manual training.

The Palmer method of business writing has been supervised for two years in the Canal Zone schools. Classes for teachers and pupils were held twice every three weeks. The improvement in writing during the past year has been marked, especially in the lower grades.

Junior Red Cross work was continued in the white schools, where every pupil is a member. This work was begun in the colored

schools.

#### EDUCATION OF APPRENTICES.

On July 1, 1919, there were 44 apprentices taking the apprentice courses. Fourteen new apprentices were enrolled during the year, 10 graduated, 3 resigned before completing their apprenticeship, and 1 was discharged due to failure to progress satisfactorily. At the close of the year there were 48 apprentices, distributed as follows:

Boilermakers. Coppersmiths. Chemists. Electricians. Machinists:	5 1 1 4	Pattern makers Pipefitters Shipfitters Shipjoiners Shipwrights Welders	4 5 3 3
General	1	Total	48

The 10 apprentices who graduated were distributed as follows:

Machinists	4	Ship fitter	1
Blacksmiths	2	Boiler maker	1
Draftsman	1	Pipe fitter	1

The "Rules for the Employment of Apprentices," which were issued in printed form September 15, 1917, were revised, effective May 1, 1920. The main change consists in the method of making appointments. There are so many more applications for apprenticeships than there are vacancies that appointment after competitive examination was considered the most satisfactory way to handle the matter, and it is believed that those appointed in this manner will be more suitable. The new rules increase the maximum age at the time of appointment from 19 to 20 years, thus enabling the boys to get one more year of schooling before taking up the apprenticeships.

#### POLICE AND FIRE DIVISION.

This division continued under the direction of Mr. Guy Johannes. The following statement shows the force of the division June 30, 1920:

Q	Police.	Fire.			
Stations.		Paid.	Volunteers.	Total.	
Headquarters	2	2			
Détectives Balboa central station.	42	15		1.	
Ancon l'edro Miguel Corozol	27	4	20 9	2	
Red Tank. Paraiso			20 26	20	
Tug Cocoli Tug Gorgona			31 29	3.	
Oil   Lint		18	29	2	
Gatun		4	20 2	2	
Gamboa 1 rijoles			11 3	1	
Tug Porto Bello Tug Tabernilla			36 33	3	
Penitentiary					
Total	183	43	269	31	

# POLICE SECTION.

In addition to the routine work of this division numerous confidential investigations and reports in connection with the protection of The Panama Canal and the general interests of the United States on the Isthmus were made. Labor troubles, resulting in a strike of the silver employees, also caused a great amount of extra work for the division during the latter half of the fiscal year.

During the year 4,202 persons were arrested, of whom 4,026 were males and 176 females, an increase of 220 as compared with the previous year. Two thousand eight hundred and ninety-eight arrests were made without warrants, 636 were made with warrants,

and 668 were disposed of without trial.

A monthly average of 92.25 prisoners served sentences in the common jails during the year, and all those physically able were employed in the construction and repair of roads, and others were employed on janitor and miscellaneous work at police and fire stations. The total value of the labor performed by the prisoners amounted to \$19,486.94.

Five homicides were committed and in all cases but one the

offenders were brought to trial.

Only one arrest was made for violation of the opium act, and due to the vigilance of the police this traffic was practically sup-

pressed.

Monthly patrols of the interior sections of the Canal Zone were continued throughout the year to determine if any new clearings or cultivations were being made, or if any new buildings were being constructed by private parties in the depopulated areas. Twenty-three arrests for trespass on Canal Zone lands were made during the year, and 21 convictions were secured.

Fifty-four persons were deported from the Canal Zone by the police during the year. Of this number 49 were convicts who had completed terms of imprisonment, and 5 were persons who had been convicted of misdemeanor charges or who were deemed undesirable persons to be permitted to remain on the Canal Zone.

Plain clothes officers continued extensive and numerous investigations in connection with the protection of the Canal and enforcement of the travel regulations, in addition to the usual police work. Plain clothes officers effected 345 arrests on misdemeanor and felony charges, and investigations were also conducted in 255 cases which did not require arrest and many cases in which defendants could not be found.

A house-to-house canvass of the population of the Canal Zone was taken by the police force between August 20 and August 31, 1919, and again between June 10 and June 30, 1920. The enumeration consisted of an accurate count of the entire civilian population for the information of local officials, giving number of males, females, and children, and whether employees or nonemployees, but no detailed data, which would have required too much extra work for the police.

Sixty-five convicts were received at the penitentiary during the year. The aggregate sentences imposed on convicts amounted to 83 years 9 months and 21 days. Fifty-one convicts completed

terms of imprisonment and were discharged from prison, as compared with 64 discharged the previous year. These convicts had earned 4 years 10 months and 4 days "good time". Discharged convicts were deported in all cases permissible by law. At the close of the year 53 convicts remained in custody, as compared with 39 at the close of the previous year.

Most of the convicts were employed during the year on the construction of the new Paraiso-Gamboa road. A few were employed on a small farm adjacent to the penitentiary, and for the maintenance of the prison buildings and grounds, manufacture and repair

of prison clothing, and other maintenance labor.

A considerable quantity of produce was raised on the small farm adjacent to the penitentiary and used in supplementing the food ration allowed the convicts. This produce aided considerably in offsetting the increased cost of food.

Number of arrests, by fiscal years, made on Canal Zone since organization.

Period.	Number of arrests.
ine 2, 1904, to June 30, 1905.	2,130
ily 1, 1905, to June 30, 1906.	
dy 1, 1906, to June 30, 1907.	5,83
ıly 1, 1907, to June 30, 1908	6,07
ıly 1, 1908, to June 30, 1909	6,27
ıly 1, 1909, to June 30, 1910	6, 94° 5, 95°
ıly 1, 1910, to June 30, 1911 ıly 1, 1911, to June 30, 1912	7,05
riy 1, 1912, to June 30, 1913.	6,62
ily 1, 1913, to June 30, 1914	4,91
ıly 1, 1914, to June 30, 1915	.] 5.15
ıly 1, 1915, to June 30, 1916	4,48
ıly 1, 1916, to June 30, 1917	4,88
ıly 1, 1917, to Jnne 30, 1918 ıly 1, 1918, to June 30, 1919.	4, 420 3, 981
ny 1, 1919, to June 30, 1919.	
[3] [4]	1,20
Total.	82,69

Number of arrests, by months, made during fiscal year ended June 30, 1920.

Months.	Males.	Females.	Total.	With warrant.	Without warrant.	Disposed of with-out trial.
July. August September October November December.	296 274 327 305 289 311	27 25 10 18 15 9	323 299 337 323 304 320	61 33 55 71 39 47	235 239 247 188 235 229	27 27 35 64 30 44
January February Mareh April May June Total	411 276 307 362 416 452 4,026	14 15 7 8 17 11	425 291 314 370 433 463 4, 202	65 48 52 52 55 58 636	293 223 189 262 272 286 2,898	67 20 73 56 106 119 668

# Arrests by stations, fiscal year ended June 30, 1920.

Station and substation.	Number of arrests.
3alboa Central Station Ancon	1,25
Pedro Miguel Cristobal Central Station.	22
Gatua Monte Lino. Gamboa.	12
Total	4,20

# Statement of disposition of persons arrested, fiscal year ended June 30, 1920.

Disposition.	Number.	Per cent.
Tried in courts: Convi 'ted. Di-missed. Continued on June 30, 1920.	2,668 608 58	81.15 17.20 1.65
Otherwise disposed of on proper authority	3,531 668 4,202	100.00

#### FIRE SECTION.

Periodical inspections of all government buildings, docks, store-houses, yards, etc., were conducted by the fire section throughout the year. Fire hose and fire extinguishers were maintained in good condition at all locations where such equipment was installed for special protection, and installations were made in many new buildings constructed during the year.

Fifteen volunteer fire companies were maintained on the Canal Zone until March 1, 1920, when this number was increased to 22 companies, being an increase of 7 companies over the number in existence at the close of the previous year. This increase was distributed as follows: Three new companies each for the tugs Gorgona and Tabernilla, and one additional company for the tug Porto Bello. Each company was composed of a maximum of 20 men, employees of The Panama Canal or Panama Railroad.

One hundred twenty-nine fires and 14 false alarms were reported during the year. Eighty-eight fires occurred in property of The Panama Canal, 21 in Panama Railroad property, 3 in United States Army property, 2 in United States Navy property, and 15 in private and United States Shipping Board property. Fifty-nine fires were in dry grass, brush, scrap, and rubbish.

The total losses from all fires during the year amounted to \$3,567,083.85, of which \$1,970,000 represents loss due to a fire on the United States Shipping Board steamer Marne; \$1,502,000 on the United States Shipping Board steamer Olockson; \$47,000 loss to Army storehouse at Empire; \$8,000 to United States Army launch in Cristobal Harbor; \$12,000 to United States Navy boathouse at Darien; and \$15,000 to steamship Crown of Galacia in Cristobal Harbor. Aside from these fires, it will be noted that fire losses on the Canal Zone were very low.

# Statement of fires and losses and property.

Fiscal year.	Number of fires.	False alarms.	Total damage.	Total property involved.
993-1907 997-1908 998-1909 990-1910 910-1911 911-1912 1912-1913 1913-1914 1914-1915	71 92 123 233 315 202 207 142	12 6 10 14 18 18 18 18	\$100, 000. 00 46, 170. 50 16, 934. 92 3, 237. 04 53, 077. 44 12, 653. 58 22, 520. 97 21, 376. 96 153, 286. 95 28, 418. 47	\$1,300,000.0 1,097,619.4 1,624,893.6 1,212,335. 2,256,210.0 1,826,995.5 1,041,450.1 1,993,012.0 2,465,654.1
915-1916  916-1917  917-1918  918-1919  919-1920	104 69	9 5 8 14	3, 190, 25 259, 351, 60 40, 805, 13 3, 567, 083, 85	1, 031, 122, 1, 044, 752, 1 6, 165, 991, 3 9, 256, 369, 3 8, 906, 017, 3

# DIVISION OF CIVIL AFFAIRS.

This division continued under the direction of Mr. C. H. Calhoun.

#### BUREAU OF POSTS.

The total receipts from the postal service were \$138,391.60, as compared with \$136,627.40 for the preceding year, an increase of \$1,764.20. The postage sales amounted to \$87,096.72, as compared with \$81,343.78 for the year ended June 30, 1919, and \$1,782.53 were collected for second-class matter, as compared with \$2,553.88 during the preceding year. Interest received on deposit money order funds amounted to \$22,141.38 during the year, as compared with \$25,746.20 during the preceding year. Table No. 8 accompanying the report of the chief of the division of civil affairs shows in detail the receipts during the present year as compared with the year ending June 30, 1919.

The Canal Zone postal service is still required by the Executive order of December 3, 1904—one of the Executive orders of the so-called "Taft agreement"—to purchase from the Republic of Panama all postage stamps sold in the Canal Zone post offices at 40 per cent of their face value. This 40 per cent subsidy to the Panaman Government amounted to \$33,783.97 during the fiscal year. The revenues from the postal service would have exceeded the expenditures for the fiscal year by \$70,178.86 if the 40 per cent subsidy on stamp sales had not been paid and if all mail matter

had been paid for at regular rates.

There were 125,123 money orders, including deposit orders, issued during the year, amounting to \$3,199,996.98, on which fees amounting to \$10,207.85 were collected. Compared with the preceding fiscal year, there was a decrease of 15,495 in the number of orders issued, an increase of \$91,295.32 in the amount and a decrease of \$216.31 in the fees collected.

Deposit money orders issued during the year had a total value of \$1,143,225, and payments of deposit money orders during the same period aggregated \$1,043,080. The balance on deposit to this account on June 30, 1920, was \$520,070, as compared with \$419,925 on deposit at the close of the previous year.

In the registry division of the post offices 273,778 letters and parcels were handled, as compared with 292,698 for the previous fiscal year. Of this number 146,523 registers were dispatched, subdivided as follows: Twenty-eight thousand seven hundred and seventy-nine domestic letters, 3,808 domestic parcels, 25,642 foreign letters, 4,804 foreign parcels, 79,991 official letters and parcels registered free, 88 c. o. d. parcels, and 3,411 domestic parcels insured. Compared with the preceding year there was an increase of 10,168 registered letters and registered and insured parcels dispatched.

Customs duty was paid to the Republic of Panama to the amount of \$33,452 on 14,302 mail parcels for nonemployees and on dutiable articles imported by employees, as compared with \$25,289.71 on

9,591 parcels during the preceding year.

Under arrangements entered into with the United States Post Office Department in 1916 all transit United States mail and foreign closed mail destined to the west coast of Central and South America is consigned to the director of posts of the Canal Zone. This arrangement continues to produce most gratifying results both as to the more rapid onward dispatch of the mails and a very material economy in the cost of its transportation. In this connection the following excerpt from the report of the Postmaster General for the fiscal year ended June 30, 1919, is quoted below:

The arrangement which became effective November 1, 1916, whereby all mails dispatched from the United States for the west coast of South America via the Isthmus of Panama are consigned to the director of posts of the Canal Zone, who supervises their onward dispatch, continued to operate with gratifying results and further reduced the cost of the Isthmus transit of United States mails, the cost for the fiscal year 1919 being \$12,773.94, or \$4,609.12 less than the cost for the fiscal year 1918 and \$94,820.51 less than the year 1916.

Attention is called to the fact that by this arrangement the cost of transporting and handling transit United States mails at the Canal Zone for the fiscal year ended June 30, 1919, was \$136,958.98 less than in the year 1913, before the opening of the Canal in 1914, although the volume of mail has increased. The figures for the fiscal year ended June 30, 1920, are not yet available.

During the year ended June 30, 1920, there was received and dispatched a total of 107,161 sacks of transit mail from New York and New Orleans, an increase of 16,070 sacks, or nearly 18 per cent, over the previous fiscal year. Of this total, 94,733 sacks originated in the

United States and 12,428 in foreign countries.

A count of all mail matter received, dispatched, and handled in transit in the Canal Zone was made during the period from October 16, 1919, to November 15, 1919, inclusive. During the same period all mail matter handled free under "official business" frank was weighed. The result showed that \$48,626 pieces of all classes of mail were handled.

Of the total of 848,626 pieces of mail handled, 228,153 pieces, or

26 per cent, were handled under official frank without postage.

### BUREAU OF CUSTOMS.

The bureau of customs has been conducted under regulations embodied in Governor's Circular No. 679 of July 14, 1914, as revised on November 21,1914. The work is closely allied to that of the marine division, the quarantine service, the division of police, and the Panama Railroad Company, and the bureau of customs cooperates

with all these branches in order to avoid unnecessary duplication of work in connection with the handling of shipping and cargoes.

There has been a large increase in shipping at Canal ports during the past year. The total number of vessels entered was 6,023 and the total number cleared was 6,016, as compared with 4,604 entered and 4,590 cleared during the previous fiscal year.

The total number of American vessels entered was 2,779 and the total number of American vessels cleared was 2,778, as compared with 1,959 entered and 1,940 cleared during the fiscal year 1919.

The increase in the total number of vessels entered during the year—an increase of approximately 118 per month, or almost 4 a day—has resulted in a large increase in the work of the customs force.

#### SHIPPING COMMISSIONER.

The chief of the division of civil affairs is also shipping commissioner and the chief customs inspectors are deputy shipping commissioners. According to law the shipping commissioner and his deputies have the same powers as shipping commissioners in United States ports and American consuls in foreign ports with respect to American seamen.

The ports of the Canal have a peculiar status, as under some circumstances they are considered American ports and under others they are considered foreign ports, which makes it necessary for the shipping commissioner and deputy shipping commissioners in the Canal Zone to be familiar with the duties of American consuls in

foreign ports and shipping commissioners in American ports.

The increase of \$20 American vessels entered and \$38 cleared from Canal Zone ports during the present year, as compared with the year 1919—more than 2 each day—has created a great deal of additional work. There were 4,281 seamen shipped on American vessels and 3,278 seamen discharged, as compared with 4,182 shipped and 3,453 discharged during the preceding year. There were 624 American seamen lodged or subsisted in the Canal Zone during the year. Of this number, 288 were returned to the United States at the expense of the appropriation for the relief of destitute American seamen, and the remaining 336 were signed on vessels as seamen or workaways and returned to the United States without expense to the Government.

### ADMINISTRATION OF ESTATES.

During the year 258 estates of deceased and insane employees of The Panama Canal and the Panama Railroad Company were administered, as compared with 161 estates during 1919, and there were 26 estates in course of settlement on June 30, 1920.

The amount involved in the settlement of the 258 estates was \$16,314.77, of which \$15,446.87 belonged to decedents' estates and

\$867.90 to the estates of insane persons.

## THE COURTS.

The district courts, one each at Cristobal and Balboa, handled fewer cases this year than last. There were 359 cases pending at the beginning of the year; 875 were filed, 952 settled, and 282 pending on June 30, 1920. Of the cases pending the first of the year 158 were civil, 119 probate, and 82 criminal. Cases filed included 157

civil, 348 probate, and 370 criminal. Those settled included 189 civil actions, 101 of which were decided, 83 dismissed, 4 transferred. and 1 reported off; 337 probate cases; and 426 criminal actions, 51 of which were acquitted, 253 convicted, 67 nol prossed, 52 dismissed, and 3 transferred. There were 195 sessions of court. A total of 879 marriage licenses was issued and 5 deeds recorded. Collection of costs, fines, forfeitures, fees, etc., amounted to \$9,431.17.

The magistrates' courts, one each at Cristobal and Balboa, had 13 civil and four criminal cases over from last year s business. There were 3,835 cases docketed during the year, 3,744 criminal and 91 civil; 3,838 cases were disposed of, leaving 3 civil and 11 criminal actions pending at the close of the year. Collections from all sources

amounted to \$17,863.91.

Under the provisions of an Executive order of May 10, 1911, petitions were issued during the year from the magistrate's court to the district judge for the commitment of 61 persons to the Corozal Asylum for observation; these included 32 white persons, males (including 20 soldiers); 29 negroes, 24 male and 5 female.

# SPECIAL ATTORNEY AND DISTRICT ATTORNEY.

The reports of the special attorney and district attorney are printed as appendixes of the Governor's report.

# MARSHAL FOR THE CANAL ZONE.

The marshal for the Canal Zone received 755 writs, subpænas, and other processes for service during the year, of which 694 were served and 61 unserved, as the parties concerned could not be located on the Zone. The marshal, or his deputy, attended at Balboa district court 135 days and at Cristobal district court 60 days. Fees collected and turned over to the collector of The Panama Canal totaled \$448.60, and the amount of fees paid witnesses for the Government during the year was \$212.

Relations with Panama.

Negotiations by correspondence or personal conference between the executive secretary of The Panama Canal and the Secretary of Foreign Relations of the Republic of Panama included the following subjects, in addition to routine matters:

Conferences between representatives of the Republic of Panama and The Panama

Canal regarding alleged abuse of commissary privileges.
Sales of road-building material, unobtainable elsewhere, to Panaman Government.

Inspection of condition of Bolivar Asylum, Panama.

Requests of Panaman Government for the appearance of Panama Canal employees as witnesses in Panama courts.

Panama advised regarding quality of meat from castrated and uncastrated cattle. Adoption of uniform regulations for issuance of chauffeurs' licenses.

Reinspection by customs employees of Panama of baggage already inspected by

Canal Zone inspectors. Bonded warehouses in Republic of Panama.

Preference to Panaman Government in the leasing of certain lots in Colon.

Requests for data regarding material and supp ies sold by The Panama Canal to

private concerns for purpose of constructing buildings in Canal Zone.

Transfer of the United Fruit Company's wireless station from Bocas del Toro to port of Almirante authorized by Panaman Government without prior approval of the Governor of The Panama Canal.

Tariff rates for telegraphic and telephonic messages sent over wires operated by the

Panaman Government.

Request of the board of directors of the Santa Tomas Hospital for removal of the superintendent.

Complaints of planters of Taboga regarding alleged regulation prohibiting their shipping fruits on southbound steamers.

Advice of Secretary of Foreign Relations requested regarding pardon of Convict

Francisco Zaldivar.

Docking charges on Republic of Panama boat San Blas at Pier No. 2.

Proposed arrangement of West India Oil Co. with Panaman Government for

Transportation of liquors through Canal Zone for towns in interior of Panama con-

tiguous to the Canal Zone.

Clearing boundary line between Canal Zone and the Republic of Panama.

Acquisition of certain territory for military purposes at Largo Remo, near mouth of the Chagres River.

Inspection of cattle as sanitary measure.

Operation of a saloon near Canal Zone boundary in Colon in violation of decree of Republic of Panama.

Proposed construction of storm sewer in the vicinity of the market, Panama City.

Exportation of Panaman silver currency by Panama Canal employees. Deportation of foreign prostitutes from Panama to their native land.

Increased payments necessary to cover cost of cleaning streets and collecting garbage in Panama City.

Construction of new Santo Tomas Hospital.

Articles of wearing apparel stolen from Army stores and sold to a merchant in Panama.

Passports for alien enemies through Isthmus from foreign ports. Collection of duty on timber exported from Panaman forests.

Petition of Colon coachmen for increase in rates.

Resolution No. 378 of Republic of Panama denying refund of customs duties.

Condition of lights on Pier 2, Colon.

Transfer of lease rights of lot 13, block 19, Colon, for fire station instead of post-office site. Suit against Panama Railroad for portion of Javillo fill.

Water supply for the town of New Chagres.

Authentication of documents emanating from the judicial authorities of the Canal Zone for the Republic of Panama.

Cooperation of Republic of Panama with Panama Canal in matter of strike of silver

employees.

Payment requested of Republic of Panama of amount due health department. \$160,000.

Request of Panaman Government for telephone line to Taboga Island.

Charges for inspection of cattle and meat at the municipal slaughter houses in Panama and Colon.

Panaman Government objects to use as silver quarters of certain buildings on Panama Railroad stable lots on account of inflammables being stored near by.

Land required for military purposes on Taboga Island.

Special commissioners of Republic of Panama to take up matters of interest to

Panama with Secretary of War.

Report on physical condition of Henry N. Schneider, an American soldier, wounded

in Panama.

Final report of the joint commission.

Free entry of certain goods for the Knights of Columbus for free distribution among enlisted men.

Suggested change in Panaman customs regulations to allow nonemployees to bring in reasonable amount of cigars, cigarettes, or tobacco for their own use.

Memorial protesting against extradition of certain merchants of Colon implicated in thefts from Panama Railroad docks.

#### LEGISLATION.

The various acts of Congress and Executive orders affecting The Panama Canal and the Canal Zone appear as an appendix to the Governor's report.

Respectfully submitted.

C. A. McIlvaine, Executive Secretary.

Brig. Gen. Chester Harding, United States Army, Governor, The Panama Canal, Balboa Heights, Canal Zone.

8847-20-17

# APPENDIX TO APPENDIX F.

# REPORT OF CHIEF OF DIVISION OF CIVIL AFFAIRS, EXECUTIVE DEPARTMENT.

Balboa Heights, Canal Zone, July 29, 1920.

Sir: I have the honor to submit the following report of the division of civil affairs for 1920:

# BUREAU OF POSTS.

The total receipts from the postal service, including box rents, payments from the Panama Railroad Company, payments from the Panaman Government for handling its mail between Panama and Colon, payments from the United States Post Office Department for handling United States transit mails, interest on deposit money order funds, sales of postage stamps and other stamped paper, collections for second-class mail matter, money-order fees, and miscellaneous receipts, were \$138,391.60, as compared with \$136,627.40 for the preceding year, an increase of \$1,764.20. The sale of postage stamps and postal cards, including the receipts from the sale of stamp books, amounted to \$87,096.72, as compared with \$81,343.78 for the year ended June 30, 1919, and \$1,782.53 were collected for second-class matter, as compared with \$2,553.88 during the preceding year. terest received on deposit money order funds amounted to \$22,141.38 during the year, as compared with \$25,746.20 during the preceding There is attached hereto a detailed statement showing the receipts during the present year as compared with the year ending June 30, 1919.

The Canal Zone postal service is still required by the Executive order of December 3, 1904—one of the Executive orders of the socalled "Taft agreement"—to purchase from the Republic of Panama all postage stamps sold in the Canal Zone post offices at 40 per cent of their face value. This 40 per cent subsidy to the Panaman Government amounted to \$33,783.97 during the fiscal year. The Panama Railroad Company and commissaries are permitted to use the official business frank in the Canal Zone for a consideration of \$100 per month; whereas an actual count of all mail matter handled during one month of the year showed that, if postage had been required at the regular rates, the amount of \$1,699.13 would have been collected during that month for postage. The bureau of posts carries free the official mail of The Panama Canal and the Army and Navy within the Canal Zone, and pays transportation charges to the United States. tached hereto a statement showing that the revenues from the postal service would have exceeded the expenditures for the fiscal year by \$70,178.86 if the 40 per cent subsidy on stamp sales had not been paid and if all mail matter had been paid for at regular rates.

#### NUMBER OF POST OFFICES.

The number of post offices in operation (16) remained unchanged during the year, except during the period from August 1 to 15, 1919, inclusive, when the post offices at Fort Amador, Fort Randolph, Paraiso, Empire, and Coco Solo were closed temporarily due to the fact that the funds at first allotted for the postal service for the fiscal year were insufficient to continue all post offices in operation.

#### LOCK BOXES.

During the months of May and June, 1920, 1,778 additional lock boxes were received and installed in post offices. The total cost of the new lock boxes was \$5,923, and it is estimated that the total revenue from rentals for the period of one year will amount to \$4,836.40.

The box rents collected during the year amounted to \$8,776.55, as compared with \$8,268.20 for the previous year.

#### MONEY ORDERS.

There were 125,123 money orders, including deposit orders, issued during the year, amounting to \$3,199,996.98, on which fees amounting to \$10,207.85 were collected. The average amount of each order was \$25.57. Compared with the preceding fiscal year, there was a decrease of 15,495 in the number of orders issued, an increase of \$91,295.32 in the amount, and a decrease of \$216.31 in the fees collected.

Deposit money orders issued during the year had a total value of \$1,143,225, and payments of deposit money orders during the same period aggregated \$1,043,080. The balance on deposit to this account on June 30, 1920, was \$520,070, as compared with \$419,925 on deposit at the close of the previous year. On June 30, 1920, there were still open old postal savings accounts aggregating \$509. The total amount on deposit at all post offices on June 30, 1920, including deposit money orders, old postal savings accounts, and unpaid fee-paid money orders in favor of the remitter, was \$530,267.56, as compared with \$437,534.50 on June 30, 1919.

Interest amounting to \$7,987.08 was paid on deposit money orders cashed during the fiscal year, as compared with \$8,604.24 for the year ended June 30, 1919. Interest received from banking institutions for money-order funds on deposit amounted to \$22,141.38, thus leaving a net balance of \$14,154.30 in the money-order interest account during the fiscal year.

# REGISTERED, INSURED, AND C. O. D. MAIL.

In the registry division of the post offices 273,778 letters and parcels were handled, as compared with 292,698 for the previous fiscal year. Of this number, 146,523 registers were dispatched, subdivided as follows: 28,779 domestic letters, 3,808 domestic parcels, 25,642 foreign letters, 4,804 foreign parcels, 79,991 official letters and parcels registered free, 88 c. o. d. parcels, and 3,411 domestic parcels insured. Compared with the preceding year, there was an increase of 10,168 registered letters and registered and insured parcels dispatched.

There were delivered during the year at all post offices 104,728 registered letters and 22,527 insured and c. o. d. packages, a total of 127,255, as compared with 156,343 for the previous fiscal year. Balboa was designated as an exchange office for the receipt and dispatch of registered and other matter for the west coast of Central and South America on November 1, 1919. Ancon, Balboa, and Cristobal, as exchange offices, handled 84,286 registered articles, a decrease of 167,243 from the previous year. Of these, 2,406 passed through the Ancon office, 6,937 through Balboa, and 74,943 through the Cristobal post office to and from foreign countries. This decrease is accounted for by the removal of censorship of mail matter which, during the war, necessitated the handling of all transit registered matter through the post office at Cristobal.

Approximately 80 per cent of the local registered mail received at Canal Zone post offices was mailed under official cover of The Panama Canal, Panama Railroad Company, and the United States Army

and Navy for which no fees were paid.

# DUTIABLE PACKAGES.

Customs duty was paid to the Republic of Panama to the amount of \$33,452 on 14,302 mail parcels for nonemployees and on dutiable articles imported by employees, as compared with \$25,289.71 on 9,591 parcels during the preceding year. During the year 16,226 parcels were delivered at Canal Zone post offices on submission of form P. C. 1160, as compared with 14,640 during the previous year.

## DUPLICATE MONEY ORDERS AND INVESTIGATIONS.

In addition to the direction and supervision of post offices and general correspondence pertaining thereto, the office of the director of posts issued 540 duplicates of lost or stolen money orders, investigated approximately 300 cases of the loss, rifling or nondelivery of registered, insured and c. o. d. mail, undertook special investigations for the United States Post Office Department relative to mail in transit through the Canal Zone, made inspections of all post offices, and issued 70 numbered circulars of instructions to all postmasters.

#### DEAD LETTER SECTION.

All unclaimed mail matter of local origin is opened in the bureau of posts and disposed of in accordance with the Postal Laws and Regulations. Unclaimed first-class matter other than that mailed in the Canal Zone is returned by the dead letter section to the country of origin for disposition. Unclaimed matter of other classes is disposed of by sale or, if of no value, destroyed. Insufficiently addressed letters are advertised in The Panama Canal Record and delivered, or returned to the senders.

# VIOLATIONS OF POSTAL LAWS AND REGULATIONS.

During the year one case was reported of the misuse of canceled postage stamps. The case was not prosecuted for the reason that the identity of the sender of the letter on which the stamp was used could not be learned.

There were five cases detected of the misuse of penalty envelopes,

but no arrests were made in connection therewith.

One arrest was made during the year for the rifling of ordinary letters by an employee. The offender was convicted on a charge of petit larceny and fined \$5.

One arrest was made for an attempt to open a mail box in the Ancon post office without proper authority, for which the offender was prosecuted on a charge of disorderly conduct, found guilty, and

sentenced to pay a fine of \$25 and to serve 30 days in jail.

One arrest was made for the forgery of a name on a request for the free entry of a mail parcel in an attempt to secure the release of the parcel from a Canal Zone post office without the payment of the proper customs duty to the Republic of Panama. The offender was arraigned in the magistrate's court, and ordered held for trial in the district court. The case was dismissed when it came up for trial in the higher court.

#### DISPATCHES TO UNITED STATES AND OTHER COUNTRIES.

During the fiscal year a total of 2,619 dispatches were made to 100 different exchange offices by the post office at Cristobal, and 1,076 dispatches were made to 40 different exchange offices by the post office at Balboa, which was designated as an exchange office for the west coast of South and Central America on November 1, 1919.

#### DELIVERY OF MAIL TO SHIPS IN TRANSIT.

The delivery of mail for crews and passengers of ships in transit through the Canal and for ships touching at Canal ports was continued during the past year with certain modifications. Mail matter for vessels of certain steamship lines operating on a more or less regular schedule is delivered to the local agents of the line. Delivery of mail to all other vessels is effected directly to the vessel through boarding officers or pilots, upon arrival of ships at Cristobal or Balboa, and through the Gatun and Pedro Miguel post offices while ships are in transit through the Canal.

Boarding officers of the customs service are prepared to sell stamps, accept letters for registration, and take applications for money orders from passengers and crews of vessels in transit, issuing receipts in each case and transacting the business for them through Canal Zone

post offices.

#### UNITED STATES TRANSIT MAIL.

Under arrangements entered into with the United States Postal Department in 1916 all transit United States mail and foreign closed mail destined to the west coast of Central and South America is consigned to the director of posts of the Canal Zone. This arrangement continues to produce most gratifying results both as to the more rapid onward dispatch of the mails and a very material economy in the cost of its transportation. In this connection, the following excerpt from the report of the Postmaster General for the fiscal year ended June 30, 1919, is quoted below:

The arrangement which became effective November 1, 1916, whereby all mails dispatched from the United States for the west coast of South America via the Isthmus of Panama are consigned to the director of posts of the Canal Zone, who supervises

their onward dispatch, continued to operate with gratifying results, and further reduced the cost of the Isthmus transit of United States mails, the cost for the fiscal year 1919 being \$12,773.94, or \$4,609.12 less than the cost for the fiscal year 1918, and \$94,820.51 less than the year 1916.

Attention is called to the fact that by this arrangement the cost of transporting and handling transit United States mails at the Canal Zone for the fiscal year ended June 30, 1919, was \$136,958.98 less than in the year 1913, before the opening of the Canal in 1914, although the volume of mail has increased. The figures for the fiscal year

ended June 30, 1920, are not yet available.

During the year ended June 30, 1920, there was received and dispatched a total of 107,161 sacks of transit mail from New York and New Orleans, an increase of 16,070 sacks, or nearly 18 per cent over the previous fiscal year. Of this total 94,733 sacks originated in the United States, and 12,428 in foreign countries. This mail was received from 196 steamers, and was dispatched on 329 steamers. A total of 11,673 sacks was forwarded by rail to connecting steamers at Balboa, and of this total 10,466 originated in the United States and 1,207 in foreign countries.

#### COUNT OF MAIL MATTER.

A count of all mail matter received, dispatched, and handled in transit in the Canal Zone was made during the period from October 16, 1919, to November 15, 1919, inclusive. During the same period all mail matter handled free under "official business" frank was weighed.

The result showed that \$48,626 pieces of all classes of mail were handled, of which 325,040 were dispatched, 380,436 received, and

143,150 handled in transit.

Of the 325,040 pieces of mail matter dispatched, postage was paid on 157,275 ordinary letters, 26,252 cards, 14,412 papers and packages, 4,444 registered letters, and 758 other pieces of registered mail, a total of 203,141 pieces. The remaining 121,899 pieces of mail were dispatched under official frank, and included 106,631 ordinary letters, 4,134 cards, 4,480 packages, 3,800 registered letters, and 2,854 registered parcels.

Of the 380,436 pieces of mail matter received, postage was paid on 176,438 ordinary letters, 94,748 other pieces of ordinary mail, 2,619 registered letters, and 1,851 registered and insured parcels, a total of 275,656 pieces. The remaining 104,780 pieces were received under official frank, and in luded 93,374 ordinary letters, 5,371 ordinary packages, 4,368 registered letters, and 1,667 registered and insured

parcels.

Mail matter in transit comprises all classes of mail matter received and dispatched by the exchange offices at Ancon and Cristobal to the cities of Panama and Colon, and to all countries in the Postal Union. Of the 143,150 pieces of mail matter handled in transit, postage was paid on 118,814 ordinary letters, 1,096 parcels, 17,197 other pieces of second and third class matter, and 4,569 registered pieces, a total of 141,676. The remaining 1,474 pieces of mail matter were received and dispatched under official frank, and included 1,107 ordinary letters, 53 parcels, and 314 pieces of registered mail.

Of the total of 848,626 pieces of mail handled, 228,153 pieces, or 26 per cent, were handled under official frank without postage.

Fifty-seven per cent of the local ordinary mail received at Canal Zone post offices, was official matter; and 80 per cent of the local registered mail received at Canal Zone post offices was mailed under

official frank.

The total weight of official matter handled during the month, including letters, packages, and sacks, was 31,964 pounds 13 ounces. The weight of the official letters and cards dispatched was 11,320 pounds, and the weight of the official packages dispatched was 20,644 pounds. Had postage been paid on the official matter dispatched \$3,550.62 would have been collected on the letters and cards, \$1,067.74 on the packages, and the registry fees on the registered matter dispatched would have amounted to \$666.30, a total of \$5,284.66.

BUREAU OF CUSTOMS.

The bureau of customs has been conducted under regulations embodied in Governor's Circular 679 of July 14, 1914, as revised on November 21, 1914. The work is closely allied to that of the marine division, the quarantine service, the division of police, and the Panama Railroad Company, and the bureau of customs cooperates with all these branches in order to avoid unnecessary duplication of work in connection with the handling of shipping and cargoes.

# MOVEMENTS OF VESSELS.

There has been a large increase in shipping at Canal ports during the past year. The total number of vessels entered was 6,023, and the total number cleared was 6,016, as compared with 4,604 entered and 4,590 cleared during the previous fiscal year.

The total number of American vessels entered was 2,779, and the

The total number of American vessels entered was 2,779, and the total number of American vessels cleared was 2,778, as compared with 1,959 entered and 1,940 cleared during the fiscal year 1919.

The increase in the total number of vessels entered during the year—an increase of approximately 118 per month or almost four a day—has resulted in a large increase in the work of the customs force.

# MERCHANDISE FOR REPUBLIC OF PANAMA.

All merchandise arriving at Cristobal and Balboa, destined to persons or firms in the Republic of Panama not connected with The Panama Canal, the Panama Railroad Company, or the United States Army or Navy, is in the custody of the Canal Zone customs until submission of the necessary papers from Panaman officials showing that duty has been paid. Permits for 6,635 releases were granted at Cristobal during the year, and 48 releases were authorized at Balboa, where the greater part of such cargo is forwarded by railroad to Panama City, there to be taken in charge by the Panaman customs officials.

# FREE ENTRY OF MERCHANDISE.

Prior to September 8, 1919, after requests for free entry on Form P. C. 164 had been approved by this office for the executive secretary, final approval was given by Panaman customs officials in Colon, but now they are finally approved by the secretary of finance and treasury of the Republic of Panama. During the fiscal year 1920 the number of requests accomplished was 1,461, as compared with 1,128 for the previous year.

#### ATTEMPTED SMUGGLING.

There were two arrests during the year for attempted smuggling. In one case the defendant was found guilty and fined \$20, and in the other case a demurrer was filed by the attorney for the defendant claiming that no violation of the Canal Zone laws had been committed inasmuch as no customs duties are collected in the Canal Zone, and that, if any violation of the law had been committed, it was against the laws of the Republic of Panama. The demurrer was sustained by the court and the case dismissed. The question of legislation to meet this situation is now under consideration.

#### OPIUM TRAFFIC.

No attempts to smuggle opium through the Canal Zone into the Republic of Panama were detected by employees of the bureau of customs during the year.

# HOUSEHOLD INSPECTIONS.

Under an agreement with the United States Treasury Department the bureau of customs is authorized to inspect and seal miscellaneous goods of American manufacture and household effects which have been purchased and used abroad for more than one year belonging to employees of The Panama Canal, the Panama Railroad Company, and the United States Government, which are intended for shipment by freight to the United States. These goods are then admitted into the United States free of duty without further inspection. There have been 288 such inspections during the fiscal year, covering 1,550 pieces of freight, as compared with 583 inspections and 4,467 pieces of freight in 1919.

As this particular inspection service is only for the purpose of assisting employees in returning household goods to the United States, and is of no real or incidental advantage to the bureau of customs, Panama Canal Circular 679–7 was issued under date of June 21, 1919, directing that, effective July 1, 1919, in addition to the charge of \$1 for declaration of inspected household goods, a charge of \$1 per hour should be made for the time spent by customs inspectors away from their regular duties on the inspection of household goods. During the year the sum of \$557 was collected for the time devoted to the inspection of household goods by the customs inspectors at Balboa, and \$356.50 for the time of customs inspectors at Cristobal while engaged on this work.

The decreased number of inspections during the year, as compared with the number for 1919, is due to the fact that post supply officers of the United States Army on the Isthmus were authorized, effective October 30, 1919, to make such inspections of goods intended for shipment by freight to the United States by Army officers.

# CERTIFICATION OF INVOICES.

The bureau of customs certifies invoices covering ordinary shipments from the Canal Zone to the United States, using forms identical with those prescribed for certification by American consuls in foreign ports. Including the invoices for household inspections, above mentioned, there were 1,420 invoices thus certified during the year, as compared with 1,323 in 1919. Fees for this service amounted to \$240 at Balboa, and to \$461 at Cristobal. Invoices for the Panama Railroad Company and departments of The Panama Canal are certified without charge.

#### SPECIAL CUSTOMS SERVICE.

In order to facilitate the discharge of passengers from vessels after the usual working hours and on Sundays and holidays at the terminal ports of the Canal, Circular 679–8 was issued by the Governor under date of August 7, 1919, providing that, effective September 1, 1919:

1. The bureau of customs shall furnish customs inspectors for inspection of passengers' baggage between the hours of 6 p. m. and 7 a. m. and on Sundays and holidays only upon the request of the master or authorized agent of any vessel calling at the

ports of Balboa and Cristobal.

2. A charge will be made for such service against the vessel for which the service is rendered on the basis of \$5 for each customs inspector engaged between the hours of 6 p. m. and 11 p. m., or fraction thereof, on any work day, and \$10 for each inspector engaged after 11 p. m.; and for service on Sundays and holidays a charge of \$10 will be made for each inspector engaged between the hours of 7 a. m. and 6 p. m. and 6 p. m. and 11 p. m.

3. The number of customs inspectors who may be required to inspect passengers' baggage of any vessel will be determined by the chief customs inspectors, or designated subordinate officers, based on their information and knowledge of the require-

ments.

Since the above-mentioned circular became effective, there has been collected from vessels requesting such special service the sum of \$830 at Balboa and the sum of \$2,105 at Cristobal.

#### PROHIBITED ALIENS.

Panama Canal Circular 714-1, of April 25, 1917, charges the bureau of customs with the exclusion of Chinese from the Canal Zone. During the fiscal year, 363 Chinese arrived as passengers at Balboa and 127 at Cristobal in transit to the Republic of Panama and other countries, making a total of 490, as compared with 251 for the previous fiscal year. Of this number 184 were admitted to the Republic of Panama by authority of that Government, and the others, with the exception of nine awaiting transportation at the end of the year, either proceeded on their journey or were returned to the port of embarkation. Chinese in transit can make arrangements to be released in the Canal Zone under bond, and 97 such bonds were accepted at the port of Balboa, and 7 at the port of Cristobal, during the year.

Chinese crews are also checked before a ship leaves a Canal Zone port, in order to see that no illegal landings have been made, and 379 crews have been so checked during the year, as compared with 324

for the previous fiscal year.

The number of prohibited alien passengers handled was almost double, and 55 more Chinese crews were checked during the year than during the previous fiscal year.

# Shipping Commissioner.

The chief of the division of civil affairs is also shipping commissioner, and the chief customs inspectors are deputy shipping commissioners. According to law the shipping commissioner and his

deputies have the same powers as shipping commissioners in United States ports and American consuls in foreign ports with respect to American seamen.

The ports of the Canal have a peculiar status, as under some circumstances they are considered American ports, and under others they are considered foreign ports, which makes it necessary for the shipping commissioner and deputy shipping commissioners in the Canal Zone to be familiar with the duties of American consuls in foreign

ports and shipping commissioners in American ports.

The shipping commissioner and his deputies supervise the signing on and signing off of all American seamen (i. e., seamen on American vessels) engaged or discharged in the Canal Zone, including the payment of the wages of such seamen, the approval of allotments, deductions, fines, and claims for overtime; receive wages of deceased and deserting seamen for deposit and proper disposition according to law; procure seamen for vessels at Canal Zone ports; discharge for hospital treatment sick and injured seamen and attend to their maintenance and return to the United States after their discharge from the hospital; maintain and return to the United States destitute American seamen found in the Canal Zone and also those sent to the Canal Zone by American consuls for shipment to the United States; take charge of the wages and effects of deceased seamen and make disposition thereof according to law; keep a register of the names and characters of seamen; supervise the operation of the seamen's institutes which are conducted by the Salvation Army at Balboa and Cristobal, and arrange for the care and subsistence of seamen at these institutions; inspect the log books, crew lists, and shipping articles of vessels to see that the provisions of law have been carried out; prepare shipping articles and extend and amend them; investigate complaints of seamen against the officers of vessels and of officers of vessels against seamen; and arbitrate disputes and disagreements with regard to the provisioning of vessels, conditions of employment, treatment, wages, advances and allotments, conduct of seamen, and all other differences between officers and seamen which may arise.

The increase of 820 American vessels entered and 838 cleared from Canal Zone ports during the present year, as compared with the year 1919—more than two each day—has created a great deal of additional work. There were 4,281 seamen shipped on American vessels and 3,278 seamen discharged, as compared with 4,182 shipped and 3,453 discharged during the preceding year. There were 624 American seamen lodged or subsisted in the Canal Zone during the year. Of this number, 288 were returned to the United States at the expense of the appropriation for the relief of destitute American seamen, and the remaining 336 were signed on vessels as seamen or workaways and returned to the United States without expense to

the Government.

During the year the total amount of wages earned by seamen who were discharged at Canal Zone ports amounted to \$378,460.35; the amount approved for deduction on account of advances, allotments, fines, slop chest account, etc., was \$106,781.66, and \$271,678.69 was either paid to seamen under the supervision of the deputy shipping commissioners or received on deposit for the seamen by the deputy shipping commissioners. The wages and effects of 13 American

seamen who died in Canal Zone hospitals were handled during the

year and remitted to the proper courts in the United States.

Until July 1, 1919, this work was performed by customs inspectors in the bureau of customs. Due to the increase in the work and the lack of customs force to perform it, the bureau of the shipping commissioner was created by the Governor, effective on the above date, in accordance with section 9 of the Executive order of January 27, 1914, which reads as follows:

9. The duties herein prescribed for the foregoing departments, offices, and agencies will be assigned to divisions or bureaus thereunder by the Governor of The Panama Canal, as the necessities therefor arise. Each of the foregoing departments shall discharge such further duties as may be assigned to it from time to time by the Governor; and the Governor, with the approval of the President, may transfer from time to time specific duties from one department to another.

This bureau has an authorized personnel of 14 men, who are designated as deputy shipping commissioners and boarding officers.

# Administration of Estates.

During the year 258 estates of deceased and insane employees of The Panama Canal and the Panama Railroad Company were administered, as compared with 161 estates during 1919, and there were

26 estates in course of settlement on June 30, 1920.

Of the 258 estates settled during the year 148 were delivered to the consular or diplomatic representatives in the Republic of Panama or the United States of the countries of which the deceased or insane persons were citizens or subjects; 55 estates were settled direct with heirs, upon satisfactory evidence of heirship being furnished; 7 estates were settled with guardians of heirs; 3 estates were settled with administrators; 5 estates were delivered to insane employees who recovered their sanity; 4 estates were delivered to dependent relatives of insane persons for their maintenance and support; and the net proceeds of 36 estates were used to settle claims against them. No estates were escheated during the fiscal year, but a petition for the escheat of one estate was pending in the district court on June 30, 1920.

The amount involved in the settlement of the 258 estates was \$16,314.77, of which \$15,446.87 belonged to decedents' estates and

\$867.90 to the estates of insane persons.

In addition to the 26 estates remaining unsettled on June 30, 1920, 12 additional cases were being investigated in which no money or

property had yet been received.

There is attached hereto a statement showing the number of estates received and settled during each month of the year, including the amount of funds handled, together with a statement giving the number, by nationalities, of the estates of deceased and insane

employees settled during the fiscal year.

Paragraph 571 of the tariff act of October 3, 1913, on imports into the United States, provides for the free entry of "personal effects, not merchandise, of citizens of the United States dying in foreign countries." As a result of correspondence during the year with the United States Treasury Department regarding shipments of personal effects of deceased American employees from the Canal Zone to the United States, the collectors of customs at New York and New Orleans have been instructed by that department that such effects

may be passed without examination, free of customs duty, provided they are accompanied by a certificate signed by the Canal Zone officer who supervises the packing of the effects to the effect that the packages were packed under his personal supervision and contain nothing but personal articles which were the property of the deceased employee, and that the decedent, at the time of his death, was a citizen of the United States.

# LICENSES AND PERMITS.

Motor vehicle and bicycle licenses were issued by the division of civil affairs, as well as permits for hunting and the keeping and carrying of firearms and the peddling of foodstuffs. During the fiscal year there were 3,898 such licenses and permits issued, of which 1,780 were for motor vehicles, 792 for bicycles, 723 for hunting and the keeping or carrying of firearms, and 603 for the peddling of foodstuffs. Agreements are in force with the municipalities of Panama and Colon providing for reduced reciprocal license fees on motor vehicles. The sum of \$10,748.05 was collected by this office during the past year for license fees, as compared with \$7,681.94 in the previous year.

The duty of issuing permits for hunting and the keeping and carrying of firearms was transferred to the police and fire division

effective July 1, 1920.

# INSURANCE COMPANIES AND CORPORATIONS.

Correspondence with insurance companies licensed to do business in the Canal Zone is handled by this office for the executive secretary, and the annual report of insurance business transacted in the Canal Zone during the calendar year is made up by this office. The seven insurance companies which were licensed to transact business during the previous fiscal year renewed their licenses during the fiscal year 1920. One other company, which was formerly licensed to do business in the Canal Zone and which still has insurance in force here, is required to keep securities on deposit and to pay the insurance tax of 1½ per cent on the gross premium receipts collected by it in the Canal Zone. There is attached hereto a statement giving a summary of the insurance business transacted in the Canal Zone during the calendar year 1919, taken from sworn statements contained in the annual reports of the companies licensed to do business here.

The division of civil affairs handles for the executive secretary correspondence relating to foreign corporations which do business or desire to do business in the Canal Zone, under the provisions of the Executive order of March 20, 1913. The one corporation which was authorized to do business in the Canal Zone July 1, 1919, renewed its license during the year. Two other corporations were licensed to do business during the year.

Respectfully,

C. H. CALHOUN, Chief, Division of Civil Affairs.

C. A. McIlvaine,

Executive Secretary,

The Panama Canal, Balboa Heights, Canal Zone.

Table No. 1.—Vessels entered and cleared, seamen shipped and discharged, and seamen lodged, subsisted, and repatriated, fiscal year 1920.

	Ves	sels ente	red.	Ves	sels clear	red.	Sear	nen ship	ped.
	Bal- boa.	Cris- tobal.	Total.	Bal- boa.	Cris- tobal.	Total.	Bal- boa.	Cris- tobal.	Total.
July. August September. October November. December.	227 228 192 215 200 282	244 244 214 241 233 323	471 472 406 456 433 605	224 231 186 220 195 285	250 237 211 239 230 322	474 468 397 459 425 607	111 106 63 177 112 152	239 277 138 129 211 253	350 383 201 306 323 405
1920. January February March April May June	273 245 260 242 250 219	316 295 282 278 269 251	589 540 542 520 519 470	269 245 262   242   252   220	310 286 292 285 273 250	579 531 554 527 525 470	132 91 120 176 84 147	311 323 230 170 312 217	443 414 350 346 396 364
Total	2,833	3, 190	6,023	2,831	3,185	6,016	1,471	2,810	4,281
	Seamen discharged.			Seamen lodged, subsisted, and repatriated.			Seamen repatriated at expense of United States.		
	Bal- boa.	Cris- tobal.	Total.	Bal- boa.	Cris- tobal.	Total.	Bal- boa.	Cris- tobal.	Total.
1919. July August September October November December	24 60 51 143 93 132	186 169 88 96 141 230	210 229 139 239 234 362	15 26 13	25 30 27 30 13 16	25 30 27 45 39 29	2	11 9 5 14 12 13	11 9 5 14 14 14
1920. January February March April May June	93 36 241 69 129 77	260 201 115 201 295 148	353 237 356 270 424 225	31 29 51 21 14 20	52 39 43 46 37 46	S3 68 94 67 51 66	13 2 1 7 3 1	48 23 36 29 36 22	61 25 37 36 39 23
Total	1, 148	2,130	3,278	220	404	624	30	258	288

Table No. 2.—Number of estates of deceased and insane employees, by nationalities, settled by administrator of estates during fiscal year ended June 30, 1920.

Native of—	Deceased.	Insane.	Total.
Chile Colombia Costa Rica France Greece Guatemala Haiti Nicaragua Panama Peru Spain United States Venezuela West Indies; British Danish	13 2 1 1 1 1 3 3 2 3 4 3 1 1 15 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 2 8	1 13 2 1 1 1 2 3 3 4 3 2 17 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Dutch French	2 16	1	17
Total	245	13	258

Table No. 3.—Number of estates received and settled, and amount of funds handled, during fiscal year ended June 30, 1920.

Month.	Number received.	Number settled.	Amount of funds collected.	Value of estates settled.
Balance of unsettled estates on hand on July 1, 1919, and amount collected in same	62		\$8,758.27	
July	7 21 7 12 13 21	55 10 19 15 14	873. 99 664. 44 1,346. 05 2,388. 78 721. 70 819. 15	\$4,362.78 952.84 1,845.71 1,736.88 1,562.70
January. February March April May June Total estates and cash handled.	9 19 18 34 43 19	19 19 15 30 47 15	479.17 208.98 649.82 2,426.50 1,274.54 527.79	1,018.49 1,464.63 581.74 1,349.10 1,120.83 319.07

Table No. 4.—Number of mail parcels released free of duty, number on which duty has been paid to the Government of Panama, and the amount of duty as shown by receipts on file, by offices, during the fiscal year ended June 30, 1920.

Name of post office.	Number admitted free of duty.	Number on which duty was paid.	Amount of duty.
Ancon. Balboa. Balboa Heights. Corozal	2,525 4,164 1,872 614	7,996 321 14 25	\$18,073.23 534.83 63.42 111.02
Coco Solo. Cristobal Culebra Empire.	58 4,491 260 115	5,816 36	14, 463, 53 16, 85
Fort Anador Fort Randolph Fort Sherman Gamboa	368 81 124 61 857	47	120.78
Gatun Monte Lirio. Paraiso. Pedro Miguel.		24 19	14.72 8.62
Total	16, 226	14,302	33,452.00

Table No. 5.—Number of insured and C. O. D. parcel-post parcels and registered articles delivered, by offices, during fiscal year ended June 30, 1920.

Name of post office.	Number of insured and C. O. D. parcels.	Number of registered articles.	Total.
Ancon. Balboa. Balboa Heights. Coroval. Coco Solo. Cristobal. Culebra. Empire. Fort Amador. Fort Randolph Fort Sherman. Gamboa. Gatun.	730	16, 757 8, 836 19, 498 3, 399 1, 575 32, 647 1, 464 1, 320 1, 268 349 429 2, 431 6, 424	22, 109 11, 423 22, 643 4, 220 2, 315 38, 624 1, 847 1, 320 1, 998 538 714 2, 431 7, 458
Monte Lirio. Paraiso Pedro Miguel: Total	145 1,139 22,527	$\frac{2,007}{6,324}$ $104,728$	2,152 7,463 127,255

Table No. 6.—Letters and parcels registered and insured, by offices, during the fiscal year ended June 30, 1920.

Name of post office.	Domestic letters regis- tered.	Domestie parcels regis- tered.	Foreign letters regis- tered.	Foreign parcels regis- tered.	Official regis- tered free.	Insured and C. O. D.	Total.
Ancon. Balboa. Balboa Heights. Corozal Coco Solo. Cristobal Culebra. Empire. Fort Amador Fort Randolph Fort Sherman Gamboa. Gatun. Monte Lirio. Paraiso. Pedro Miguel.	7, 291 3, 734 1, 796 958 1, 560 9, 819 566 200 424 113 187 275 921 12 115 808	1,312 248 121 606 50 1,124 14 50 11 56 8	7, 595 1, 473 194 182 15 14, 770 145 24 98 1 21 195 176 31 234 488	2,375 80 22 40 2,224 7 7	4, 458 3, 779 48, 836 613 300 11, 984 885 100 178 76 70 - 1, 137 3, 622 31 1, 182 2, 740	531 758 221 23 189 600 334 297 51 231 249	23, 562 10, 072 51, 196 2, 422 2, 114 40, 521 1, 944 374 1, 015 517 1, 009 4, 998 74 1, 547 4, 261
Total	28,779	3,808	25,642	4,804	79,991	3,499	146, 523

Table No. 7.—Number and amount of money orders issued, and amount of money on deposit at post offices, by offices, as reported by postmasters, for fiscal year ended June 30, 1920.

Name of post office.	Number of	Amount.	Amount of unpaid money orders June 30.		
	orders.	21.Boune.	Fees.	Deposit.	Fee paid.
Ancon Balboa Balboa Heights. Corozal Coco Solo. Cristobal Culebra. Empire¹ Fort Amador Fort Amador	27, 555 25, 064 9, 987 2, 984 1, 629 37, 140 2, 590 1, 541 398	\$614,616.44 831,370.59 262,288.73 79,531.40 44,604.28 862,211.02 55,178.58	\$2,113.11 2,115.63 \$8\$5.88 201.80 164.92 3,212.44 172.50	\$105, 230.00 165, 785.00 39, 380.00 7, 005.00 2, 410.00 111, 800.00 7, 300.00	\$115 50 165 60 9,025.00 61.00
Fort Sherman	623	21,392.42	48. 04	2,505.00	
GatunMonte Lirio <sup>1</sup>	7,368	164,784.30	510.50	31,530.00	310.06
ParaisoPedro Miguel	1,598 7,187	21,811.39 179,746.14	84.42 511.38	4,575.00 30,830.00	12.00
Total	<sup>2</sup> 125, 664	3 3, 198, 850. 84	4 10, 192. 81	5 514, 620.00	9,688.56

Not money order office.
 Figures taken from advices by postmasters and include spoiled and canceled orders. Auditor's records show 125,123.
 Figures taken from advices by postmasters. Auditor's records show \$3,199,996.98.
 Figures taken from advices by postmasters. Auditor's records show \$10,207.59.
 Figures taken from advices by postmasters. Auditor's records show \$520,070.

# Table No. 8.—Receipts.

	1919	1920
Interest on deposit money order funds. Sales of postage stamps and other stamped paper. Second-class mail. Money-order fees. Panama Raifroad mail. Handling mail between Panama and Colon for Republic of Panama. Han Iling of United States transit mail and credit from other departments of the Government. Box rents. Miscellaneous receipts 2.	2,553.88 10,426.16 1,200.00 600.00	\$22, 141.38 \$7,096.72 1,782.53 10,207.59 1,200.00 1,675.00 4,760.19 8,776.55 751.64

<sup>&</sup>lt;sup>1</sup> Also includes payments from the Republic of Panama for the handling of mail for South and Central America at the Ralboa exchange post office.

<sup>2</sup> Includes credits from other Departments of the Government.

Table No. 9.—Summary of insurance business transacted in the Canal Zone during the calendar year 1919.

#### LIFE INSURANCE COMPANIES.

	Number.	Amount.
Policies in force Dec. 31, 1918. Policies issued during 1919. Policies lapsed during 1919. Policies in force Dec. 31, 1919. Losses and claims incurred during 1919. Losses and claims settled during 1919. Losses and claims unpaid Dec. 31, 1919. Premiums collected by life insurance companies during 1919.	225 • 54 659 1	\$872, 251. 00 808, 443. 00 105, 649. 00 1,375, 045. 00 1,000. 00 3,000. 00 1,000. 00 50, 449. 95

#### MISCELLANEOUS INSURANCE COMPANIES.

	Premiums received in 1919.	Losses paid in 1919.
Accident Auto and teams property damage	1 28, 27	\$2,721.92
Fidelitý Health Jability Surety	313.18	1,089.36 325.11 379.29
Surety. Workman's compensation.	4,505.13 557.89 20,903.22	10.98

<sup>1</sup> Return premiums.

Table No. 10.—Surplus of postal receipts over expenditures if 40 per cent subsidy on stamp sales had not been paid to Republic of Panama and if postage had been paid on official matter which was carried free during fiscal year 1920.

Actual postal revenues	\$138,391.60 63,415.92	
Total.  Expenditures for salaries and wages.  Expenditures for other than salaries and wages less 40 per cent subsidy on stamp sales amounting to \$33,783.97.	98, 744. 88	
Total		131,628.66
Surplus receipts over expenditures		70, 178. 86
Total		201, 807, 52

# APPENDIX G.

# REPORT OF THE DISTRICT ATTORNEY FOR THE CANAL ZONE.

Ancon, Canal Zone, July 1, 1920.

Sir: There is attached hereto a tabulated statement of all criminal prosecutions in the district court of the Canal Zone for the fiscal year ended June 30, 1920.

There was a total of 500 cases disposed of in the district court,

with the results shown in the table.

Of the criminal cases pending at the beginning of the fiscal year 1919–20, all have been disposed of except the two charges against E. F. Bataille arising out of the failure of the Continental Banking & Trust Company, which have been referred to in previous reports at length. Warrants of extradition granted by the Governors of New Jersey and New York are still in the hands of the Department of Justice.

In addition to these 2 cases, there were 18 other cases pending at the close of the fiscal year, 13 of which had been continued by the

court and 5 of which had not been set for trial.

There were four applications for writs of habeas corpus during the year, as follows:

Maxim Ford. Ormond Donawa. Ashton Mottley. John Neverson.

Maxim Ford was a fugitive from justice from the State of Massachusetts and was apprehended on the Canal Zone. Upon presentation of a request for extradition by the Governor of Massachusetts and the granting of the same by the Governor of The Panama Canal, Ford sued out a writ of habeas corpus and was released on bail pending a hearing on the return of the writ. Before a hearing could be had the petitioner left the jurisdiction of the Canal Zone and has not as yet been apprehended.

The remaining three writs of habeas corpus were granted to petitioners whose deportation had been ordered by the Governor of The Panama Canal. The Donawa case was dismissed of record by agreement of the petitioner and the district attorney. No hearing

has been had as yet on the other writs.

The following civil cases were disposed of during the year:

Medrano de Idiaquez v. Mauremus Petersen et al.: This was a libel in admiralty for the recovery of \$2,323.20 in gold coin which had been seized while aboard a vessel for an alleged violation of the provisions of the espionage act. It was the contention of the Government that Idiaquez was attempting to export gold coin in violation of the act. Idiaquez was tried before a jury in September, 1918, and found not guilty. A libel in admiralty was then instituted to secure the return of the property in question. After a hearing on the pleadings the court ordered the coin returned to the libellant.

Jose Fernandez v. W. B. Meares, jr.: This was a suit for damages arising out of a collision between an automobile driven by the plaintiff and a Government car driven by the defendant. Inasmuch as the defendant was engaged in the performance of

his official duties at the time of the accident, the district attorney defended the suit at the request of the Governor of The Panama Canal. Trial was had before the court without a jury and judgment for plaintiff rendered in the sum of \$125 and costs.

Jose H. Stilson v. Santiago Samudio: The plaintiff in this action instituted a suit for a foreclosure of an alleged mortgage against the defendant. A decree in foreclosure was rendered and execution was had thereon. The marshal of the Canal Zone levied upon and sold as the property of Samudio certain lands situated within the Camacho watershed which had been in the possession of the United States since 1905. Prior to the confirmation of the sale the district attorney filed a suggestion on behalf of the Government, setting forth that the lands in question were owned by the United States Government and could not be levied upon and sold as the property of the defendant. After a hearing upon the motion to confirm the sale and the suggestion of the district attorney, the court ordered the sale confirmed and the deed of the marshal to issue.

The following civil cases were pending at the close of the fiscal

David Osborne v. Charles Hill: This is an action for trespass, alleging false imprisonment and malicious prosecution. The defendant is a Zone police officer, and the district attorney is representing him at the request of the Governor of The Panama Canal. The issues are joined and the case is ready for trial.

Charles Hinds v. J. H. Farquharson: This is an action similar to the Osborne v.

Hill case and is now awaiting trial.

Luis Reina v. Panama Railroad Company: This is an action by the plaintiff to establish his interest in certain real estate which the defendants contend is owned by the United States Government and has been in its possession for a number of years. The district attorney filed a suggestion on behalf of the United States setting up the ownership and possession of the United States. To this suggestion the plaintiff filed certain exceptions, which were disallowed by the court. No answer has as yet been filed to the suggestion, nor has the court ruled upon the Government's motion to dismiss the action.

John F. Mountain v. Chester Harding. Governor of The Panama Canal: The plaintiff in this suit secured from the court a temporary injunction restraining defendant from suspending plaintiff's license as a pilot in Canal Zone waters. The defendant made a return to the writ asking that the temporary injunction be dissolved. The

suit is pending awaiting an answer to the return of the writ

Louise Bennett v. Panama Railroad Company et al.: This is an action for damages in the sum of \$5,000 on account of personal injuries sustained by reason of a balcony falling at house 406 Colon Beach, occupied as Panama Railroad employees' quarters, and where plaintiff was employed as a servant. After the filing of the original complaint plaintiff petitioned the court for leave to join the chief quartermaster of The Panama Canal as a party defendant. This petition was granted by the court, and the cause is awaiting the filing of answers by the defendants.

# The following admiralty cases were disposed of during the year:

Houlder, Middleton & Co. (Ltd.) r. Chester Harding. Governor of The Panama Canal: The libellant asked damages in the sum of \$55,000 for injuries alleged to have been sustained by the steamship Lautaro during transit of the Canal on August 25, 1916. A demurrer was filed to the bill of the libellant, but before hearing was had thereon the libellant dismissed the bill on his own motion.

# The following admiralty cases are pending:

Leopold Falk et al. v. Steumship Olockson and the United States Shipping Board Emergency Fleet Corporation: This is a libel by the master and crew of the tug Gorgons as salvors of the steamship Olockson. The defendant steamship is owned by the United States Shipping Board Emergency Fleet Corporation and in March, 1920, was reported as being on fire at sea. The tvg Gorgona, owned by The Panama Canal, put to sea and assisted in bringing the Olockson into the port of Balboa, where the fire was extinguished. Libellants ask for reasonable salvage compensation for the assistance rendered to the defendant steamship.

Halvor Huun et al. r. the United States of America, owner of the launch Taboquilla: The Taboquilla is a launch belonging to The Panama Canal. In May, 1920, the launch was sighted at sea by the steamship Conrad Mohr. The engines of the launch had broken down and had not been operating for a period of several hours. The seven passengers were taken aboard the Conrad Mohr and the launch was towed to the port of Balboa. Reasonable salvage compensation for the assistance rendered

the launch is asked by the libellants.

# Criminal prosecutions, 1919-20.

	Number.	Guilty.	Not guilty.	Dismissed.	Disposed of otherwise.	Remarks.
Assault	2 18	11	2 4	<u>-</u> -	1 demurrer sustained, dis- missed.	
Assault with deadly weapon	7	2	1	1	1 bail forfeited	1 assault.
Assault with intent to com-	3	2			1	1 assault and battery. Do.
mit rape. Assault with intent to com-	1				1	Do.
mit rape on minor child.	1				1	
Assault with intent to com- mit infamous crime	1				1	Do.
against nature. Assault with intent to kill Automobile regulations, violation of.	1 29	23	4	<u>i</u>	1 nol. pros	To asylum. 1 guilty; new trial, not guilty
Automobile and coach tariff	1	1				
regulations, violation of. Battery	3	2			1 appeal withdrawn	
Bigamy	1	1	• • • •		(17 nol. pros	1 guilty; sentence suspended,
Burglary	34	11	1	1	4	dismissed.
						conduct.
Buying Government prop- erty from a soldier.	1	••••		1		
Carrying concealed weapon.	1 4		4			
Contempt of court	1					
Customs regulations, violation of.	2	1	• • • •		1 demurrer sustained, dis- missed.	
Cruelty to animals  Deportation, returning to Canal Zone.	3	1		i	1 nol. pros.	
Disorderly conduct	47	23	6	10	2 demurrers sustained, dismissed. 6 appeals withdrawn	
Disturbing the peace Drunk and disorderly	2 1		1		1 appeal withdrawn	
EmbezzlementEmbezzlement in the State	6		î 	1	4 nol. pros 1 returned to United States	
of Wyoming. Escaping from prison Executive Order No. 26, violation of.	1	4			1 demurrer sustained, dis- missed.	
Exhibiting deadly weapon. False pretenses and cheats.	1 5	i			1 nol. pros	
Fighting	1		··i		4 nol. pros	
Forgery	10	2		4	{2 nol. pros	2 petit larceny.
Fraud	$\begin{vmatrix} 1 \\ 2 \end{vmatrix}$	2		1		
0.000					(34 nol. pros	To asylum.
Grand larceny	103	30	11	5	17 2 information withdrawn 3 bail forfeited.	17 petit larceny.
ncestnfamous crime against na-	1 4	4				
nto vication	2 2	1		1		
LibelLiquor regulations, viola-	30	22	2	6		
tion of.				(10	2 nol. pros	
Loitering	30	15	1	i	1 appeal withdrawn	1 guilty; sentence suspended, dismissed.
Lottery laws, violation of Manslaughter	1 3	1		···-		
MayhemMurder	2 4	1 3			1 1	1 assault and battery. 1 manslaughter.
Mutiny	4	4				i manolaugmet.
Navigation laws, violation	}48 } 8	44	2		1 bail forfeited. 1 nol. pros 1 nol. pros	To asylum.
of. Nonsupport	1			1	(1 bail forfeited	
Obtaiuing money under	1				1 information not filed	

# Criminal prosecutions, 1919-20—Continued.

	Number.	Guilty.	Not guilty.	Dismissed.	Disposed of otherwise.	Remarks.
Opium act, violation of Perjury  Petit larceny  Postal laws, violation of Quarantine regulations, violation of. Rape Receiving stolen property Refusing to pay train fare	1 6 13 2 5 2 4 1	8 5 1 3	1 1	5 { 2 1 2	1 nol. pros.	1 guilty; sentence suspended dismissed.
for a minor. Revised Statutes, United States, sec. 4596, violation of. Robbery. Sanitary regulations, violation of. Securing signature by false promises and pretenses. Seduction.	3 9 1 1	2 4 1	1 2		{1 nol. pros	2 petit larceny.
Vagrancy	10	2	1	$\begin{cases} 6 \\ 1 \end{cases}$		1 guilty; sentence suspended dismissed.
Total	500	249	51	68	tions withdrawn; 2 informulations sustained, dismissed; 1	im); 7 bail forfeited; 2 informs mations not filed; 5 demurrer returned to United States; 3 han those charged; 10 appeal
Not guilty Dismissed by court						

In the 51 cases not guilty, 1 case was found guilty on original trial, a new trial was given by the court, and defendant was found not guilty.

Of the 68 cases dismissed by the court, 4 were found guilty, sen-

tence suspended by the court, and later dismissed.

Of the 72 cases nol prossed by the district attorney, 3 were sent to the insane asylum at Corozal. In a great majority of the cases nol prossed more than one charge had been made against the defendants for the same or similar offenses, and the defendants being convicted on one charge, the district attorney entered a nol. pros in the other cases.

In 32 cases the defendants were found guilty of offenses other than

those charged, as follows:

0 /	
Charged.	Found guilty.
1 assault with deadly weapon	Assault and battery.
1 assault with deadly weapon	Assault.
1 assault with intent to commit rape	Assault and battery.
1 assault with intent to commit rape on minor child	Do.
1 assault with intent to commit infamous crime against nat	ure Do.
3 burglary	Petit larceny.
1 burglary	Disorderly conduct.
2 forgery	Petit larceny.
17 grand larceny	Do.
1 mayhem	Assault and battery.
1 murder (jury)	Manslaughter.
2 robbery	Petit larceny.
_	

Demurrers to the forms of informations were sustained in five cases and the cases dismissed.

In 11 cases jury trials were demanded by the defendants, as follows:

70110 1101	
1 false pretenses and cheats. 1 guilty. 7 grand larceny (1 disagreed) 4 guilty, 2 not guilty. 2 manslaughter. 2 not guilty. 1 murder. 1 manslaughter.	7.
11	
Guilty of offense other than charged.	5
Not guilty. Disagreed.	1
	11
Of the 500 cases disposed of 167 were cases on appeal from magistrates' courts, disposed of as follows:	the
Guilty	91
Not guilty  Dismissed by court.	$\begin{array}{c} 22 \\ 34 \end{array}$
Dismissed by court. Nol. pros	4
Appeals withdrawn, fines paid.  Demurrers sustained, dismissed.	10
Guilty; sentence suspended, dismissed by court.	2
Guilty; new trial given, not guilty.	1
Total	167

Respectfully,

A. C. HINDMAN, District Attorney.

Brig. Gen. Chester Harding, United States Army, Governor, The Panama Canal, Balboa Heights, Canal Zone.

# APPENDIX H.

# REPORT OF THE SPECIAL ATTORNEY.

Ancon, Canal Zone, August 24, 1920.

Sir: I have the honor to submit herwith my annual report as special attorney for The Panama Canal for the fiscal year ended June 30, 1920. Following the usual practice I am including the business transacted by me as counsel for the Panama Railroad Company on the Isthmus, as well as a statement of the operations of the land office of The Panama Canal and the real estate transac-

tions of the Panama Railroad Company.

The personnel of the special attorney's office was reduced during the fiscal year, due to the fact that the work of the joint commission terminated in the latter part of the fiscal year. The services of two land inspectors were discontinued. The organization at the present time consists of the special attorney, the assistant to the special attorney, one clerk, one draftsman on the gold roll, and one messenger on the silver roll. The assistant to the special attorney is also land agent for The Panama Canal. The special attorney is also counsel on the Isthmus for the Panama Railroad Company, and he is aided in his work by the assistant to the special attorney, whose salary is paid entirely by the Panama Railroad Company. Counsel for the railroad is provided with a clerk at the expense of the Panama Railroad Company. Counsel receives no salary from the Panama Railroad Company.

# LAND MATTERS OF THE PANAMA CANAL.

A joint commission was appointed on February 28, 1913, by the President of the United States and the President of Panama, in conformity with Articles VI and XV of the Panama Canal treaty of 1903. The commission continued until March 10, 1920, when they made their final report to the two Governments, after all of the cases upon the commission's docket had been disposed of, with the exception of 16 that remained on the docket for reasons which will be stated hereafter.

A number of changes took place in the personnel of the commission between 1913 and 1920, due to deaths and resignations of members. Mr. Federico Boyd was the only member who served throughout from the beginning to the end of the commission, with the exception of a few intervals when he was absent on account of illness. Mr. George A. Connolly, one of the American members of the joint commission, resigned on January 31, 1920, and was succeeded by Mr. H. Λ. A. Smith, who served on the commission until its labors terminated on March 10, 1920.

A total of 3,600 claims were filed with the joint commission from the date of its organization in 1913 to the termination of its work in 1920. By agreement of the Government of the United States and the Government of Panama, the commission established a rule to the effect that no claims could be filed with the commission after December 27, 1914, unless good cause was shown why the claim had not been filed before that date, in which event the claim could be filed not later than the 27th day of March, 1915. A few claims were filed after the latter date with the consent of the two Governments. However, the total number of claims filed was 3,600, as

already stated.

All of the claims were disposed of by the commission or by the umpires, except the 16 claims already referred to. The aggregate demand made by the claimants in the above-mentioned 3,600 claims was \$21,072,235.41. Some three or four hundred of these claims were filed by the members of the commission on their own motion, on behalf of claimants, during the first six months of the existence of the commission. No docket numbers were given to these claims at the time, nor were the respective amounts claimed by the claimants stated. A considerable number of these claims were disposed of by the commission during the year 1913, without public hearing, solely upon evidence obtained by the commission itself in chambers or without the presence of counsel for the United States or the claimants. Hence it is impossible to state with accuracy the value of the claims as asserted by the claimants in these particular cases, and in default of that data, the amount of the award or the sum paid to the claimant in direct settlement has been taken as the sum demanded by the claimants. After the reorganization of the commission in 1914 the claims which had not been numbered by the commission of 1913 were given consecutive numbers upon the commission's docket, and they are included in the 3,600 claims.

It might be well to divide the claims disposed of by the commission into groups, stating also the aggregate amount of money paid by the United States, if any, for obtaining the adjustment of each respec-

tive group.

Since February, 1913, the joint commission has made awards in 844 claims: the aggregate sum demanded in these claims was \$6,116,682.97. The aggregate amount awarded by the commission for the 844 claims was \$880,534.79.

The umpires of the joint commission appointed since its organization in 1913, disposed of 40 claims by awards in which the aggregate demand was \$6,704,490.76. The amount awarded to these

40 claimants by the umpires was \$860,144.15.

The commission since February, 1913, dismissed 2,041 claims on the ground that they had been settled directly between the claimants and the agents of the United States. The aggregate demand made in the 2,041 claims was \$3,718,885.50. The aggregate amount paid by the Government in their settlement was \$764,512.71.

During the same period the joint commission defaulted 318 claims. The aggregate demand made in the 318 claims was \$974,062.28.

For the want of jurisdiction 178 claims were dismissed wherein a

total of \$1,504,821.15 was demanded.

Because of a previous award having been made covering the same property the joint commission dismissed 42 claims, involving an

aggregate demand of \$388,277.37.

There were 10 claims withdrawn upon the motion of claimants, and which were accordingly dismissed by the joint commission; the aggregate demand of the 10 claims was \$167,397.50.

For the want of merit the joint commission dismissed 106 claims wherein the amount demanded was \$1,374,040.38.

Five claims were found to be duplicates of prior claims and were accordingly dismissed by the joint commission. These five claims

involved an aggregate demand of \$1,798.50.

It might be added that a considerable number of the 318 claims defaulted under the joint commission's rule because of the lack of prosecution were claims in which direct settlement had been made with the claimants by agents of the United States; and in a number of instances these claims were duplicates filed by a commission of Panamans claiming to act as the representatives of the claimants under authority of the Panaman Government. This commission acted without sufficent data, and, in consequence, most of the claims which they filed related to property which had already been paid for by the United States, and the claimants were no longer interested in the matter, and in consequence made no appearance before the commission.

One of the 318 claims noted here among those defaulted is the claim of the Playa de Flor Land & Development Co., docket No. 2900, for land and improvements at Toro Point, for which damages in the sum of \$357,040 were demanded. This claim was set down for hearing on November 17, 1919, and when the case was called for trial upon that date the attorney of record for the claimants stated to the commission in public session, and also in a written document, that he refused to submit the case to the jurisdiction of the commission. The American members of the commission voted to dismiss the case at once, but the Panaman members declined to dismiss the claim. However, a rule of default was entered by the commission, unanimously, against the claimants. At the expiration of the 60-day period fixed in the rule, which was established with the consent of the two Governments, an extension was granted to February 24, 1920. This also with the consent of the two Governments. February 2, 1920, a motion was filed by counsel for the claimants asking that the hearing be postponed until the 15th of March, 1920. The Panaman members of the commission voted to grant the motion; the American members voted to deny it. On February 26, 1920, counsel for the claimants asked that further action on the case be suspended until the umpire passed upon the issue, by reason of the fact that the members of the commission were equally divided in con lusion. The American members voted to deny this motion, while the Panaman members voted to grant the request. Upon this state of the case the American members were of opinion that the rule of default had become absolute. The Panaman members, on the other hand, contended that the disagreement should go to the umpire. I concur in the conclusion reached by the American members that the rule of default became absolute and that there was nothing to refer to the umpire.

I might add that subsequently the umpire, at the instance of the Panaman Government and without consulting the American Government, gave an informal opinion to the Panaman Government that the issue should have been referred to him and that the case was still pending. Inasmuch as the matter had not been referred to the umpire by the two Governments or by the commission, he was without

jurisdiction to make the announcement.

At all events, the commission terminated its labors and made its final report and the case can not come before another commission

except with the consent of the two Governments.

The 16 cases remaining undisposed of, already referred to in this report, involve claims arising under leases or contracts for occupancy of land in the Canal Zone made with the Panama Railroad Company. The Congress of the United States, by virtue of section 2 of the sundry civil appropriation act of March 3, 1915, and section 2 of the sundry civil appropriation act of July 1, 1916, declared that the joint commission was without jurisdiction to adjudicate any such claims, and that no part of the moneys appropriated by those acts or any other act could be used in the payment of such claims, or in the payment of salaries or expenses of the joint commission in adjudicating or settling any of such claims. In view of these positive Congressional mandates the American members of the commission

declined to proceed to a hearing of the 16 claims.

The 16 claims just mentioned were not within the jurisdiction of the commission, in my judgment. The leases held by the claimants were canceled by the Panama Railroad Company, the lessor, in conformity with the terms of the lease. A disagreement arose as to the meaning of certain clauses of the leases with respect to the indemnification that the claimants were entitled to. Counsel for the Panama Railroad Company then suggested to the claimants that they institute suits in the Canal Zone courts to determine the issues. This they declined to do. They presented claims against the United States before the joint commission instead. They did this upon the alleged ground that the Panama Railroad Company had canceled the leases simply to clear the land for the benefit of the United States. While it may be conceded that their conclusion was correct, yet the issues were between them and the Panama Railroad Company, and any demand for damages that they might have was against the railroad and not against the United States. The agents of the Panama Railroad Company have repeatedly advised the claimants, since they filed their claims with the joint commission, that the company was willing to submit the controversy to the courts of the Canal Zone; but the claimants have refused to do this.

#### TABULATION OF THE AFOREMENTIONED CLAIMS.

The 3,600 claims filed before the joint commission between February, 1913, and the end of the period allowed for filing such claims, may be placed in the following classes or categories:

	Number of claims involved.	Amount claimed.	Amount paid in settlement or awarded.
Dismissed because of payment to claimants by agents of the United States Dismissed under rules of default. Dismissed because of lack of jurisdiction Dismissed because of previous award of the joint commission in a prior claim. Withdrawn. Dismissed because of lack of merit. Dismissed because of being duplicates of other claims filed by the same person. Awarded for by the joint commission.	178 42 10 106	1,594,821.15 388,277.37 167,397.50 1,374,040.38 1,798.50	
Awarded for by the joint commission  Awarded for by the umpire.  Undisposed of by the joint commission and the umpire	40	6, 116, 682, 97 6, 704, 490, 76 121, 779, 00	860, 144.15

The various joint commissions and umpires appointed under the Panama Canal treaty prior to December 5, 1912, made 21 awards, aggregating the sum of \$304,588. There are no data available to indicate what the aggregate of these 21 claims amounted to as demanded by the claimants. We thus have a grand total of 905 claims settled and paid for under awards made by all of the joint commissions and umpires appointed under the treaty, aggregating the sum of \$2,045,266.94.

It might be well to say that the claimants in a few cases have declined to accept the moneys awarded to them by the commission. The award made by the umpire in the sum of \$102,400 in favor of the claimants in the case of Julia del Carmen Bermudez de Aleman et al., docket No. 2982, involving the Punta Paitilla property, has not been paid, inasmuch as counsel for the Government declined to certify the award for payment upon the ground that the umpire had departed from instructions to him contained in the treaty, and the matter has been submitted to the State Department for its consideration.

The statements contained in this report, with respect to claims disposed of by the commission and by direct settlement with the land office, are made after a careful examination of our records and those of the joint commission, and discrepancies between our records and those of the joint commission appear to be due to the

following causes:

The fact that the commission early in 1913 entered up so many claims upon their own motion without stating the amount demanded by the claimants. A number of claims were dismissed in part, an award made to the claimants in part, and again only a part of the claim was referred to the umpire under disagreement. The claimants in several cases were allowed to amend their claims verbally, during the trail, by increasing the amount demanded. In other cases awards were made for the improvements only, and later other awards were made in the same cases for the land claimed, and this together with awards to other claimants, the cases having been consolidated.

While there may be some inaccuracies in the statements made in this report, everything has been done that is possible to reach correct conclusions, and it is believed that the discrepancies between the records of this office and those of the joint commission have

been substantially adjusted in this report.

# LAND CLAIMS DISPOSED OF DURING THE FISCAL YEAR.

Forty-five land and improvement claims were settled by the land office during the fiscal year 1919–1920, aggregating the sum of \$33,-238.96.

A total of 4,537 land and improvement claims were settled and paid for by the land office since the work of the clearing of the Canal Zone commenced under the President's depopulation order of December 5, 1912, aggregating the sum of \$1,154,475.56. These settlements were made direct by the land office with the various claimants, and no awards made by the joint commission or the umpires are included in the foregoing statement.

The law department of The Panama Canal was authorized to settle land claims on August 6, 1908, by virtue of an Executive order of the President. Since that date the law department, and afterwards the office of the special attorney, under authority of the act of Congress of April 7, 1914, have settled directly with the claimants 5,599 claims for damages to land and improvements taken over by the Government for Canal and railroad purposes. The amounts paid in settlement of all of these claims aggregated the sum of \$1,403,378.86, including the sum of \$764,512.71 paid by way of direct settlement of 2,041 claims filed by the claimants with the joint commission and which claims were afterwards dismissed by the commission because of such direct settlements with the Government.

Some settlements for improvements destroyed were made by the Canal and railroad organizations prior to August 6, 1908. But inasmuch as these transactions were not handled by the law department, which was not created until August 6, 1908, there are no data available in this office with respect to such settlements. I might say, however, that they do not involve any very large sum of money.

The total amount paid for land and improvement claims under awards of all of the commissions and umpires appointed under the Canal treaty (the first commission having been appointed in 1905) as well as payments made under direct settlements made with the claimants since August 6, 1908, the date on which the law department was created, aggregated a grand total of \$3,448,645.80.

At the commencement of the fiscal year there were pending before the joint commission 94 claims, involving an aggregate demand of \$2,466,869.81. There were pending before the umpire 13 claims, wherein the aggregate demand amounted to \$3,695,796.56. There

were no new claims filed during the fiscal year.

During the year the joint commission certified to the umpire for his decision 7 claims, wherein the total amount demanded was \$683,516.67. He disposed of a tetal of 20 claims during the fiscal year, wherein an aggregate demand was made of \$4,379,313.23. Thirteen of these claims were certified to him during the year 1918-19. Of these 20 claims, 17 were disposed of by the umpire through 17 awards, aggregating the sum of \$495,776.70. The aggregate amount claimed in these 17 claims was \$4,125,713.23. The umpire dismissed 3 claims. Two of these claims were for the aggregate sum of \$103,600, and went off for the want of merit. The other claim, entitled Quebrada de Oro Plantation & Mining Co., docket No. 3003, was dismissed by the umpire without prejudice to the right of the claimant to file its claim before a competent tribunal. The amount demanded in this claim was \$150,000. We take this dismissal to mean a final disposition of the claim in so far as the Government of the United States is concerned. We are also of the opinion that the claim is without merit. The claimant, however, is making efforts to have the claim resubmitted to another commission.

During the fiscal year the joint commission disposed of 71 claims, wherein the aggregate demand was \$1,304,534.14, and in detail are

as follows:

Seven of the claims, involving an aggregate demand of \$69,263.64, were disposed of by nine awards, the aggregate amount awarded

being \$19,074.91. One claim, wherein \$50,000 was demanded, was dismissed on claimant's motion. Seventeen claims, wherein an aggregate sum of \$72,056.35 was demanded, were dismissed by the commission because of lack of jurisdiction. Twenty-two claims, asking for \$326,893.65, were dismissed by the commission on evidence being presented that the claimants had made direct settlements with the agents of the United States. Five claims, asking for \$302,582, were dismissed on account of previous awards having been made for the same property. Nine claims, wherein \$215,764.50 were demanded, were dismissed by the commission because of lack of merit. Ten claims, wherein the aggregate demand made was for \$625,014, were dismissed under the commission's rule of default on account of failure to prosecute on the part of the claimants.

There still remain undisposed of 16 claims, being claims based upon Panama Railroad Company leases already referred to in this report. The aggregate amount demanded in the 16 claims is the

sum of \$121,779.

It might be well to refer again to the claim of the Playa de Flor Land & Development Co., involving a demand for \$357,040, which we contend went off by default and which the claimants say is still pending, and their contention is supported by the Panaman members of the joint commission and by the unauthorized ruling of the umpire.

# PANAMA CANAL LAND LICENSES,

On June 30, 1920, there were 58 lot licenses in effect in the Canal Zone, which had been issued by the land agent on behalf of The Panama Canal. Of this number seven licenses were issued during the fiscal year 1919–20. The licenses were granted to various parties to erect oil tanks, steamship office buildings, cable offices, lodge halls, and residences for the employees of steamship companies, oil companies, and the cable company. The licenses also included lots for churches. The revenue collected on these licenses for the fiscal year 1919–20 aggregated the sum of \$16,290.02. No rental, however, was collected on lots occupied by churches and used for religious purposes.

#### PANAMA RAILROAD LAND MATTERS.

The land agent of The Panama Canal acts as land agent for the Panama Railroad Company under a contract between The Panama Canal and the Panama Railroad Company by the terms of which the latter pays to the former the sum of \$9,000 per annum for such service.

# PANAMA RAILROAD LEASES AND LICENSES REPORTED BY THE LAND AGENT.

I am submitting herewith a statement of leases and licenses from the Panama Railroad Company to various parties in effect July 1, 1920, as shown by the land office records:

Statement of Panama Railroad leases and licenses in effect July 1, 1920

	Lea	scs.	Lots.		Rental.	
Location.	July 1, 1919.	July 1, 1920.	July 1, 1919.	July 1, 1920.	July 1, 1919.	July 1, 1920.
Colon . Folks River, R. P Stable lots, Colon Las Esplanadas Guachapali Santa Cruz. Panama Yard including Eng- lish wharf and bulkhead Juan Ponce	823 52 8 103 153 89 17	853 52 103 153 89 18	830 54 11 122 194 107½ 29½ 1	878 54 122 194 107 30	\$82, 282. 28 2, 926. 40 534. 00 3, 987. 00 8, 378. 93 4, 001. 28 5, 368. 00 60. 00	\$96,309.40 2,926.40 3,987.00 8,378.93 4,001.28 5,392.00 60.00
Total for leases	1,246	1,269	1,349	1,386	107, 537. 89	121,055.01
Location.	Licenses and permissions.		Lots.		Rental.	
Miscellaneous (Colon)	3 24 6 6 1 2 1 2 1 2 1	3 25 1 1 3 1	8 2 1 2	1 3	\$114.00 21,180.00 1,505.52 1,560.00 360.00 1.00 120.00	\$114.00 21,302.04 (1) 480.00 168.00 120.00 900.00
Total for licenses and permissions	40	35	13	4	24, 960, 52	23, 085, 04
Grand total for all leases, licenses, and permissions.	1,286	1,304	1,362	1,390	132, 498. 41	144,140.05

<sup>&</sup>lt;sup>1</sup> This item covers steamship-lot sites in Cristobal, and is no longer collected by the Panama Railroad Company, having been turned over to The Panama Canal accounts during the fiscal year just past.

The foregoing statement relates to lots leased by the railroad

company in the cities of Panama and Colon.

A decided increase is shown in the amount of approximated landrental bills to be issued during the next fiscal year, for the city of Colon, as compared with the approximate land-rental bills issued during the fiscal year 1918–19, which can be accounted for by the fact that during the year just ended 15 lots were leased in the newly created warehouse district at an annual rental of \$4,543.52. In addition, 38 lots were leased in the newly created white residential district at an annual rental of \$8,810.

The licenses for all the stable lots located on the south side of Ninth Street, between G and I Streets, Colon, were canceled during the year by the direction of the health officer of Colon-Cristobal. The major portion of the new concrete stables being built by the Panama Railroad Company have been completed, and all draft and coach animals of Colon and all wagons, carts, and coaches are now being stabled and accommodated in the new buildings. These stables are located south of Sixteenth Street, between Reyes Alley and G Street.

A slight increase is shown in this report in the amount of approximated rentals on buildings, rooms, and stores, Colon and Cristobal, accounted for by the reason that two new storerooms were created

out of two alleyways in the Panama Railroad Company's concrete building, Colon, located on Eleventh, Front, and Bottle Alley, and have been leased at an annual rental of \$540, and the rental rate of one storeroom in the same building was increased \$62.04 per annum; offsetting these increases we must deduct the sum of \$480 per annum on account of the fact that the lease issued to one lessee for the joint occupancy of room 7-A, Masonic Temple, Cristobal, with the land agent, has been canceled, the lessee having secured the lease to a larger office room in the same building. At the present time room

7-A is occupied only by the land agent.

A warehouse district (bonded or unbonded) was opened up during the year, the district comprising 21 lots located in block 54, Colon, situate between Reyes Alley, G, Fifteenth, and Sixteenth Streets. The district is divided into three tiers of 7 lots each, and 14 of the 21 lots have a frontage upon a street through which a spur track has been run to accommodate the handling of freight into and out of the warehouse, the spur running north and south between two of the tiers and joins the Broadway track. Fifteen of the 21 lots were leased during the year, and there are now before us several inquiries

relating to the lease rights in the remaining 6 lots.

A residential district, restricted to the use of persons of the Caucasian race only, was opened up during the year, the district consisting of blocks 20, 21, 26, and 27, a total of 99 lots. This district is bounded on the north by Seventh Street, on the east by K Street, on the south by Ninth Street, and on the west by G Street. During the year 38 of the lots were leased. There are applications before

us now for the lease rights in several of the remaining lots.

During the fiscal year the Panama Railroad Company purchased a two-story wooden building from Mr. Joseph D. Williams, which building is located on the Huerta Sandoval tract in the city of Panama, owned by the United States and held under license by the Panama Railroad Company, for the sum of \$5,000. The building division of The Panama Canal renovated the building into a tenement-type house at a cost of \$5,850.39. We have leased the building under temporary permission for the sum of \$75 per month, which price includes light and water.

The total of leases, licenses, and permissions issued by the Panama Railroad Company on lots in the cities of Panama, Colon, and Cristobal in effect on July 1, 1920, was 1,304, covering 1,390 lots, and for which bills were issued in the amount of \$144,140.05, during the fiscal year 1919-20, as shown by the records of the land office, which figures are \$11,641.64 more than those shown for the corresponding item

in the report for the fiscal year 1918-19.

The total amount of money actually collected on account of the items covered in the preceding paragraph during the fiscal year just ended, as indicated by figures submitted to this office by the auditor, is \$135,996.46, and which represents an increase of \$3,643.77 over the actual collections on account of the same items for the year 1918–19; that is to say, \$8,143.59 less than the aggregate amount of the bills rendered. All of this, or practically all of it, has been paid since the end of the fiscal year.

Thirty-three new leases were issued during the fiscal year 1919-20,

covering 55 lots, all in the city of Colon.

No fires which affected property situated on Panama Railroad Company lots, of sufficient importance to warrant any mention here

occurred during the fiscal year.

On June 26, 1920, the Board of Directors of the Panama Railroad Company authorized the land agent to grant extensions, beyond the usual five-year period upon the expiration of the present leases on lots upon which wooden buildings have been erected, at the best rental rates then obtainable. According to the authority granted when a lease is about to expire a representative of the building division will inspect the building situate upon the lot, and if the building division's representative finds that the condition of the building warrants it, an extension of 5, 10, or 15 years (depending upon the condition of the building) will be granted by the Panama Railroad Company.

During the fiscal year the fill between Third and Ninth, G and K Streets was completed and, as already stated in this report, the occupancy of the area between Seventh and Ninth, G and K Streets, has been restricted to members of the Caucasian race. An additional fill is now being made along the south side of Ninth Street, between

Broadway and K Streets.

Municipal work in block 53 has started. This block is located directly north of block 54, the area laid aside during the year for warehouse sites.

# PANAMA RAILROAD LITIGATION.

The litigation against the Panama Railroad Company in the Canal Zone has increased to a considerable degree, due largely to the action of the courts in holding that resort may be had to principles of the common law in the interpretation of the statutes of Colombian and Panaman origin. Also due largely to the wreck of the passenger train which occurred near Gamboa on May 20, 1918, in which some of the second-class coaches of the company were demolished and some

passengers killed and a considerable number injured.

As a result of the Gamboa wreck a large number of claims for damages because of alleged personal injuries and loss of personal property were presented against the railroad company. The greater number of claims presented were adjusted by the claim officer. Seventeen suits were filed for alleged personal injuries and loss of property occasioned by the wreck. The claims for damages in these suits aggregate the sum of \$187,043.60. Fifteen of these suits, involving an aggregate demand of \$165,323, have been disposed of either by judgment or compromise settlement. The aggregate amount of such settlements and judgments was \$18,275. Two of the 17 suits remained pending in the Canal Zone courts at the end of the fiscal year and they represent an aggregate demand of \$21,720.60.

The 15 claims above referred to as having been either anicably settled or adjudicated in the Canal Zone courts include the cases of Camila Castilla v. Panama Railroad Company and James Rock v. Panama Railroad Company, in which judgments for \$1,500 and \$3,000, respectively, were rendered against the railroad company. Both of these cases are now pending in the United States Circuit Court of Appeals for the Fifth Circuit, at New Orleans, on writ of

error sued out by the railroad company.

The following Panama Railroad cases were pending at the end of the fiscal year:

DISTRICT COURT, CRISTOBAL DIVISION.

Louis Anderson v. Panama Railroad Company, civil docket No. 319. This is a case wherein suit is brought for damages in the amount of \$2,500 on account of personal injuries alleged to have been received by the plaintiff while in the employ of the company at its cold-storage plant at Mount Hope, Canal Zone, which injuries involved the loss of a finger on the right hand. Appearance for the defendant has been duly entered in the case and a motion on the latter's behalf requiring plaintiff to file security for costs is now pending in said suit.

John A. Brown, administrator of the estate of Adolphus Brown, deceased, v. Panama Railroad Company, civil docket No. 231. This is a suit for damages in the amount of \$10,000 on account of the death of plaintiff's decedent which occurred through the negligence as alleged of the defendant company while the deceased was in its employ in the cold-storage plant at Cristobal. The defendant has filed a demurrer to the plaintiff's complaint and also a motion to require the plaintiff to give security for

costs.

Louis Bennett v. Panama Railroad Company, civil docket No. 240. This is a suit for damages in the sum of \$15,000, based upon the alleged personal injuries of a minor nature sustained by plaintiff resulting from the collapse of a defective veranda of one of the houses used as employees' quarters by The Panama Canal, in which building the plaintiff was employed as a house servent by the employee who occupied it. Since the filing of the suit the plaintiff has joined the chief quartermaster, Panama Canal, as party defendant. The defendant has entered its appearance and has filed a motion asking that the plaintiff be required to give security for costs.

This case will doubtless be dismissed as there is no responsibility of the Panama Railroad involved. The house in question is under the control and jurisdiction of

The Panama Canal.

Messrs. Albert and Jacob David Cohen, a copartnership doing business under the firm name and style of Cohen Brothers, plaintiffs, v. The United Fruit Co. This is an action for conversion and damages involving the loss of 16 cases of shoes. The

Panama Railroad Company has been made a party defendant.

Alsace Carrina v. Panama Railroad Company, civil docket No. 268. This is an action for damages in the amount of \$5,000, based on alleged slanderous statements made of the plaintiff, who was employed on the Cristobal docks of the company, by an agent and servant of the defendant. A demurrer was filed by the defendant to the plaintiff's complaint on July 31, 1919, which demurrer was argued by counsel for both parties in the case very soon thereafter, and was taken under advisement by the court. No decision had been reached at the end of the fiscal year.

Joseph Jordan v. Panama Railroad Company, civil docket No. 317. This is a suit for damages in the amount of \$5,000 arising out of alleged personal injuries and damages to a coach sustained by plaintiff at the 11th street crossing in Colon. The company has duly appeared in the case and filed a motion requiring the plaintiff to give

security for costs.

Joseph Liscomb v. Panama Railroad Company, civil docket No. 226. This is a suit for damages in the sum of \$5,500, based on the alleged fact that plaintiff was denied passage on one of the railroad steamers after purchasing a ticket entitling him to such passage. The defendant appeared in the case and filed pleas to the jurisdiction of the court, and also a motion requiring the plaintiff to give security for costs.

tion of the court, and also a motion requiring the plaintiff to give security for costs.

Adolphus Lodge, a minor, by his guardian ad litem, V. G. de Suze, v. Panama Railroad Company, civil docket No. 136. This is a suit for damages in the amount of \$10,000 for injuries alleged to have been sustained by plaintiff because of being run into by one of defendant's engines in Cristobal. Appearance was entered by the defendant and a motion on its behalf was filed to require the plaintiff to give security for costs.

P. W. Murray v. Panama Railroad Company, civil docket No. 315. This is a suit for damages in the amount of \$677.60 arising out of the alleged loss of and damage to certain household goods which were being carried on defendant's steamship *Elizabeth*. Appearance was entered on behalf of the defendant as well as a motion requiring the

plaintiff to give security for costs.

Hyman Magnus, a minor, by his guardian ad litem, Josephine Gray, v. Panama Railroad Company, civil docket No. 263. This is a suit which involves a claim of \$50,000, based on the alleged personal injuries sustained by the minor through being run down by one of defendant's commissary delivery trucks. The defendant has filed an answer in the case as well as a motion requiring the plaintiff to give security for costs.

Warren E. Minnix v. Panama Railroad Company, civil docket No. 327. This is a suit for damages in the sum of \$7,500 arising out of alleged injuries sustained by the plaintiff in the course of his employment at the defendant's coaling plant at Cristobal.

Appearance on behalf of the defendant has been entered.

Frederick Olivierre v. Panama Railroad Company, civil docket No. 302. This is a suit for damages in the amount of \$2,500 arising out of alleged personal injuries sustained by the plaintiff while employed as a stevedore on defendant's docks in Cristobal. Defendant has filed a demurrer to plaintiff's complaint and also a motion to require the plaintiff to give security for costs.

Panama Railroad Company v. United Fruit Co., civil docket No. 278. This is a suit for damages in the amount of \$314.21, the value of certain cold-storage supplies which it is alleged were mishandled by the defendant company on one of its steamers, and as a result were totally lost to the plaintiff. The suit is now pending upon com-

plaint and answer.

John Richard v. Panama Railroad Company, civil docket No. 296. This is a suit for damages in the amount of \$2,000, based upon the alleged personal injuries sustained by the plaintiff while in the employ of the defendant on the docks at Cristobal. The defendant has filed a demurrer to plaintiff's complaint and also a motion to require

the plaintiff to give security for costs.

Catherine Rice, administratrix of the estate of Jonathan Rice, deceased, v. Panama Railroad Company, civil docket No. 252. This is a suit for damages in the amount of \$25,000 arising out of alleged injuries resulting in the death of Jonathan Rice, while in the employ of the defendant at its coaling plant in Cristobal. The defendant company has filed a demurrer to plaintiff's complaint and also a motion to require the plaintiff to give security for costs.

George Scott v. Panama Railroad Company, civil docket No. 238. This is a suit for damages in the amount of \$7,500, based upon alleged personal injuries sustained by the plaintiff, consisting of the loss of one finger, while in the employ of The Panama Canal on defendant's docks in Cristobal. Demurrer has been filed by the defendant to the plaintiff's complaint and also a motion to require the plaintiff to give security

Alexander White v. Panama Railroad Company, civil docket No. 262. This is a suit for damages in the amount of \$12,500 arising out of alleged injuries sustained by the plaintiff while on defendant's right of way along the Margarita spur of the railroad. The defendant has filed an answer to the complaint and also a motion to require the

plaintiff to give security for costs.

Alpheus Williams, administrator of the estate of Samuel Augustus Williams, deceased, v. Panama Railroad Company, civil docket No. 270. This is a suit for damages in the amount of \$10,000 arising out of alleged injuries resulting in the death of Samuel Augustus Williams, who was employed by the defendant company on its docks in Cristobal. The defendant has filed a demurrer to plaintiff's complaint and also a motion to require the plaintiff to give security for costs.

#### DISTRICT COURT, BALBOA DIVISION.

Louis Strobel r. Panama Railroad Company, civil docket No. 277. This is an action for damages in the sum of \$20,000 arising out of personal injuries alleged to have been sustained in the Gamboa wreck on May 20, 1918. Defendant has filed a demurrer to plaintiff's complaint and also a motion to require the plaintiff to give security

James J. Towey v. Panama Railroad Company, civil docket No. 259. This is an action for damages in the sum of \$2,350.60 based upon alleged personal injuries and the loss of personal baggage which was in the plaintiff's custody at the time of the Gamboa wreck on May 20, 1918. The claim for damages based upon plaintiff's personal injuries was disposed of by compromise through which the defendant paid the plaintiff the sum of \$300. The plaintiff then amended his complaint and asked for \$1,720.60, the alleged value of certain moneys and personal property which he claimed he had on his person or in his custody at the time of the wreck and which were lost. The defendant filed a demurrer to the amended complaint and also a motion to require the plaintiff to give security for costs.

#### THE SUPREME COURT OF THE UNITED STATES.

Panama Railroad Company, plaintiff in error r. Noel Pigott, a minor, by his guardian ad litem, George Morrell, defendant in error, No. 425. This was a suit for \$50,000 damages on account of personal injuries sustained by Noel Pigott, a minor, and which resulted from an accident occurring in the city of Colon. Republic of

Panama, Judgment was rendered against the railroad company in the district court of the Canal Zone, Cristobal division, for the sum of \$7,500. The judgment of the trial court was affirmed by the circuit court of appeals at New Orleans, and thereupon writ of error was sued out from the Supreme Court of the United States by the railroad company, and the case is now pending in that court.

The following Panama Railroad Company cases were disposed of either by judgment or compromise settlement during the fiscal vear just ended:

DISTRICT COURT, CRISTOBAL DIVISION.

Edwin Brown v. Panama Railroad Company, civil docket No. 297. This is a suit for damages in the amount of \$5,000 arising out of alleged personal injuries sustained by the plaintiff, received at defendant's docks in Cristobal, while in the employ of the defendant. The suit was amicably settled under the compensation act of Septem-ber 7, 1916, by payment of the sum of \$265.35 to the plaintiff, and thereupon the suit

was duly dismissed upon the plaintiff's motion.

James Daley r. Panama Railroad Company, civil docket No. 70. This was an action for debt in the sum of \$440.80, arising out of an alleged breach of contract by the railroad company. The plaintiff entered a nonsuit on September 4, 1919, and

thereupon the case was dismissed.

T. A. Green v. Panama Railroad Company, civil docket No. 97. This was an action for damages in the amount of \$1,000 for injuries resulting in the death of a horse struck by one of defendant's trains in the city of Colon on July 4, 1914. The plaintiff died in the year 1917. The case was settled by compromise with his administratrix, the Panama Railroad Company paying her \$200 in full satisfaction of the claim and the case was thereupon dismissed.

Herbert Evans r. Panama Railroad Company, civil docket No. 273. This suit was for damages in the sum of \$5,000 based upon an alleged assault committed upon the plaintiff by the defendant's conductor while the plaintiff was a passenger on one of defendant's trains. A judgment was rendered in favor of plaintiff against the defendant in the sum of \$250, plus \$24 costs on March 31, 1920, and the judgment was

satisfied by the defendant.

Louis Harewood v. Panama Railroad Company, civil docket No. 256. This was an action for damages in the amount of \$450 arising out of an alleged collision between plaintiff's coach and one of defendant's engines at what is known as the Broadway crossing in Colon. The case was settled by the payment to the plaintiff by the defendant of the sum of \$200, and it was dismissed upon plaintiff's motion.

Charles Haynes v. Panama Railroad Company, civil docket No. 292. This was an

action for damages in the amount of \$5,000 because of alleged personal injuries received by the plaintiff while in the employ of the defendant on the defendant's docks in Cristobal. The suit was compromised by the defendant paying to the plaintiff the sum of \$500 and furnishing the plaintiff with deck passage from the Isthmus to The suit was thereupon dismissed on plaintiff's motion.

Fitz Gerald Oxley and Louise Oxley, his wife, v. Panama Railroad Company, civil docket No. 279. This was a suit for damages in the amount of \$3,000 arising out of alleged personal injuries sustained by Louise Oxley while alighting from a train at Compromise settlement was effected by which the railroad company paid to the plaintiff the sum of \$650, and the suit was thereupon dismissed on plaintiff's

motion.

Anastasia Pearl, administratrix of the estate of Josiah Blake v. Panama Railroad Company, civil docket No. 291, This was a suit for damages in the sum of \$2,220 arising out of alleged personal injuries which resulted in the death of Josiah Blake, who, it was claimed, was run over by a labor train in Colon in 1906. On December 4, 1919, the suit was dismissed without prejudice upon the plaintiff's motion.

Anastasia Pearl has since filed a suit for damages against the Panama Railroad Company in the Panaman courts in which substantially the same issues are presented.

Messrs. Segal and Brockman, copartners, doing business as the Panama-American Junk Company v. Panama Railroad Company, civil docket No. 242. This is an action for damages in the amount of \$469.15, arising out of the alleged loss of freight by the defendant's steamship company. The case was dismissed on plaintiff's motion on September 18, 1919.

Clare E. Smith v. Panama Railroad Company, civil docket No. 281. This was a suit for damages in the sum of \$12,500 arising out of alleged personal injuries sustained by the plaintiff as a result of being run over by one of the defendant's commissary delivery trucks. The plaintiff recovered the sum of \$2,750, plus \$58.10 costs, upon a verdict of the jury, and the judgment was satisfied by the defendant company.

Abraham Thrope v. Panama Railroad Company, civil docket No. 200. This was a suit for damages in the sum of \$1,000 arising out of alleged personal injuries sustained by the plaintiff while in defendant's employ on its docks in Cristobal. The suit was compromised by the defendant paying the plaintiff \$500 and a dismissal of the same was formally entered on September 4, 1919.

Arnold Valencia v. Panama Railroad Company, civil docket No. 168. This was a

Arnold Valencia v. Panama Railroad Company, civil docket No. 168. This was a suit for damages in the sum of \$2,000 arising out of the defendant company's alleged failure to deliver plaintiff's baggage aboard the steamship *Danube* and thus causing the plaintiff to delay his sailing. On September 4, 1919, plaintiff entered a nonsuit

and the case was accordingly dismissed.

Fred Warden v. Panama Railroad Company, civil docket No. 280. This was a suit for damages in the sum of \$5,000 arising out of alleged injuries sustained by the plaintiff at the coaling plant in Cristobal. The suit was amicably settled by payment to the plaintiff of the sum of \$100, whereupon the suit was dismissed on plaintiff's motion.

In addition to these suits disposed of in the Cristobal division of the district court during the fiscal year, the claims of Hubert McPherson and Gurditta Singh v. Panama Railroad Company were compromised without suit by the payment of \$500 and \$75, respectively, to the above-named claimants, the first-named claimant being furnished transportation from Cristobal to Kingston in addition to the \$500 paid to him.

#### DISTRICT COURT, BALBOA DIVISION.

Stanley Bailey v. Panama Railroad Company, civil docket No. 274. This was a suit for damages in the sum of \$10,000 arising out of alleged personal injuries received by the plaintiff while in the employ of the defendant company as an electrician's helper at Gamboa. The suit was formally dismissed on December 8, 1919, because of the plaintiff's acceptance of compensation under the act of September 7, 1916.

the plaintiff's acceptance of compensation under the act of September 7, 1916.

Camila Castilla v. Panama Railroad Company, civil docket No. 292. This was an action for damages in the amount of \$50,000 arising out of the alleged death by wrongful act of plaintiff's decedent, a minor, male, illegitimate child, age 6 years, which met its death in the Gamboa wreck on May 20, 1918. Trial was had before a jury which resulted in a verdict for the plaintiff in the sum of \$1,500. Defendant such out a writ of error from the United States Circuit Court of Appeals at New Orleans, and the case is now pending in that court.

Bienvenida Cabeza v. Panama Railroad Company, civil docket No. 303. This was an action for damages in the sum of \$15,000 arising out of injuries alleged to have been sustained by the plaintiff in the Gamboa wreck on May 20, 1918. The case was amicably settled and the plaintiff received from the derendant the sum of \$2,400 in full satisfaction of all demands, and thereupon the suit was dismissed by the plaintiff.

satisfaction of all demands, and thereupon the suit was dismissed by the plaintiff. D'Hlip Singh r. Panama Railroad Company, civil docket No. 260. This was an action for the recovery of the value of personal property consisting of money which the plaintiff alleged he lost from his person at the time of the Gamboa wreck on May 20, 1918. Trial was had before a jury and a verdict was rendered in favor of the defendant.

The demand of the plaintiff in his original complaint was for damages in the sum of \$973. However, the railroad company disposed of those elements of damages in the suit involving plaintiff's personal injuries and the loss of nesessary personal baggage by payment to him of \$175. The amended complaint upon which the parties went to trial, made a demand for the sum of \$685 and interest—the amount in cash alleged to have been actually lost from plaintiff's person in the wreck.

Grace Garrison v. Panama Railroad Company, civil docket No. 316. This was an

Grace Garrison v. Panama Railroad Company, civil docket No. 316. This was an action for damages in the sum of \$5,000 arising out of alleged personal injuries sustained by the plaintiff in the Gamboa wreck on May 20, 1918. The case was compromised by the defendant paying to the plaintiff the sum of \$2,000, and dismissal of the suit

was thereupon entered upon plaintiff's motion.

William Green v. Panama Railroad Company. civil docket No. 256. This was an action for damages in the sum of \$5,000 based upon alleged personal injuries received in the Gamboa wreck on May 20, 1918. Compromise settlement was effected by which the railroad company paid to the plaintiff the sum of \$300 and thereupon the case was dismissed upon the plaintiff's motion.

Llewlyn Malcolm v. Panama Railroad Company, civil docket No. 248. This was a suit for damages in the sum of \$2,000 arising out of alleged personal injuries sustained

by the plaintiff in the Gamboa wreck on May 20, 1918. The suit was amicably settled by paying the plaintiff the sum of \$100, and a dismissal was formally entered on August

25, 1919.

James Rock r. Panama Railroad Company, civil docket No. 310. This was an action for damages in the sum of \$15,000 arising out of the death by alleged wrongful act of plaintiff's decedent, Rachael Rock, his wife, in the Gamboa wreck on May 20, 1918. Trial by jury was had on May 13, 1920, and resulted in a verdict in favor of the plaintiff in the sum of \$3,000. A writ of error was sued out from the United States Circuit Court of Appeals by the defendant company and the case is now pending in that court. Mateo Ugalde r. Panama Railroad Company, civil docket No. 235. This was an

Mateo Ugalde v. Panama Railroad Company, civil docket No. 235. This was an action for damages in the sum of \$7,500 based upon alleged personal injuries resulting in the loss of some fingers while the plaintiff was employed by the cattle industry at Summit. The plaintiff accepted compensation under the compensation act of Congress of September 7, 1916, and upon his motion the suit was dismissed on November

28, 1919.

The claim of Maria Joseph v. Panama Railroad Company, in which no formal suit was filed, and which claim was based upon alleged injuries received by the claimant in the silver market at Ancon, because of an alleged defect in the floor thereof, was settled amicably by paying to Maria Joseph the sum of \$250.

#### MAGISTRATE'S COURT, BALBOA DIVISION.

The case of the Panama Railroad Company v. Carlos E. Diez, was filed in the magistrate's court, division of Balboa, on January 29, 1920, to recover the value of certain automobile repairs made at the railroad company's shops on certain machines owned by the defendant. Judgment by default was obtained against Diez on February 6, 1920, in the sum of \$205.04 with costs.

## THE SUPREME COURT OF THE UNITED STATES.

Panama Railroad Company, plaintiff in error, v. Joseph T. Toppin, defendant in error. No. 519. This was a suit for damages in the sum of \$15,000 for personal injuries resulting from an accident which occurred in the city of Colon, Republic of Panama. Complaint was filed in the Cristobal Division of the District Court on July 3, 1915. The plaintiff obtained a judgment against the railroad company in the sum of \$10,000. The judgment was affirmed by the United States Circuit Court of Appeals at New Orleans, and a writ of error from the Supreme Court of the United States was perfected by the railroad company; and the Supreme Court of the United States on March 15, 1920, affirmed the judgment of the trial court, and thereafter the said judgment was fully satisfied by the Panama Railroad Company.

#### LAND LITIGATION OF THE PANAMA RAILROAD COMPANY.

The case of the Panama Railroad Company v. A. S. Mendez et al. still remained pending upon the docket of the District Court of the Canal Zone, Cristobal division. This suit was instituted by the railroad company on March 6, 1912, to recover certain lands lying to the east of the railroad line between Colon and Mount Hope. Some time after the President's depopulation order of December 5, 1912, was issued the railroad company asked for the dismissal of this case without prejudice on the ground that the United States had taken over this property and that the defendants had filed their claims before the joint commission for damages on account of the fact that the Government had taken over the land. The motion was denied by the court. The claim of A. S. Mendez and others was tried by the joint commission and was dismissed for want of merit by that body under a rule made on July 2, 1918, which fact had been brought to the attention of the district court by means of a memorandum filed by the district attorney as well as by the defendant company. This case ought not to remain upon the docket of the district court.

The case of the Panama Railroad Company v. Eufracio C. de Villalobos and Porfirio Melendez also remains pending upon the docket of the District Court of the Canal Zone, Cristobal division. This was a suit filed by the railroad company on March 1, 1912, for the recovery of certain lands at or near Toro Point. After the suit was filed, Porfirio Melendez entered his disclaimer, stating that he had no interest in the subject matter of the litigation. The land involved in the suit was taken over by the United States and was dedicated to the military reservation of Fort Sherman,

and is now used as such reservation. This fact was called to the court's attention by the railroad company and a motion was filed upon that ground by the company asking for a dismissal of the case without prejudice. Soon after the joint commission was organized in 1913, the Villalobos family filed a claim before that body asking for damages against the United States for the same property, and this fact has been called to the attention of the district court, but no action has been taken by the court thereon. The Villalobos family failed to appear for the trial of the claim before the joint commission and an absolute rule of default was entered against them in due order by the joint commission. This case ought not to continue upon the docket of the district court.

The case of Louis Reina v. Panama Railroad Company et al., civil docket No. 305, was filed on November 8, 1919, in the Cristobal division of the district court of the Canal Zone. This is a suit to establish the petitioner's interest in the land known as 'Rio Indio and Mindi," situated between Forks River and Gatun. The issues in this case were fully disposed of in the case of Tomas Reina v. Beatrice Pracho et al., and the Panama Railroad Company, civil docket No. 139, which was disposed of in the district court of the Canal Zone, Cristobal division, by a judgment of dismissal against the plaintiff, and which judgment was affirmed by the United States Circuit Court of Appeals at New Orleans on March 25, 1919. The land involved in the suit was taken over by the United States about five years ago, and Louis Reina, the plaintiff in the case now pending in the district court, division of Cristobal, together with a number of other claimants, filed their claims with the joint commission seeking

an award for damages against the United States.

The claim has been satisfied either by award or by direct settlement by the United States with the claimants, with the exception of the small claim of Louis Reina and Tomas Reina, his brother. Louis Reina and Tomas Reina failed to appear before the joint commission on the day set for the trial of their claim and an absolute rule of default was entered against them by that tribunal. The district court of the Canal Zone is without jurisdiction to entertain the suit of Louis Reina against the Panama Railroad Company for the reason that the United States had taken over the property years before the institution of the suit, and further, an attempt to prosecute the suit in district court of the Canal Zone in 1916 failed for the want of jurisdiction of the court, and though the parties adverse to the railroad and the United States appealed their case to the Court of Appeals at New Orleans, they were unsuccessful, and that court held that inasmuch as their claim was pending before the joint commission, that that tribunal had the exclusive jurisdiction of the subject matter. In my opinion, the suit now pending was instituted for the purpose of harassing the Government into a settlement satisfactory to the attorney for the claimant.

#### PANAMA RAILROAD COMPANY LITIGATION PENDING IN THE COURTS OF PANAMA.

The Panama Railroad Company retains special counsel in the Republic of Panama to aid in defending the company's interests before the courts and departments of the Republic of Panama. The enforced collection of rentals from lessees of the company's lots in the cities of Panama and Colon is accomplished through the Panaman attorney. In several instances it was necessary to institute suits in order to recover the rent and obtain possession of the land from delinquent lessees, and on occasions action had to be taken through the various administrative departments of Panama and Colon to protect the company's possession of its real estate in those two cities.

The Javillo Realty Co. filed a suit against the Panama Railroad Company on January 19, 1920, in the court of the first circuit of the city of Panama to recover from the Panama Railroad Company a tract of land consisting of 4,000 square meters adjoining the site of the American pier on the shore front of Panama Bay. This property is in the possession of the Panama Railroad Company and is occupied by various parties under license from the railroad company.

Some years ago Messrs. Rodriguez & Uribe, of which firm Mr. Jose Rodriguez R. was a member, entered into a contract with the Panama Railroad Company by which the railroad permitted Rodriguez & Uribe to use its tracks in hauling material from Diablo Hill for the purpose of filling in and reclaiming about 8 or 9 acres in the area lying between the city market and the city of Panama and the American pier. In return for the use of the railroad tracks

as well as for the material taken from Diablo Hill, Rodriguez & Uribe agreed to fill in and reclaim the area in front of the railroad company's property adjoining the American pier, and this is the area which the Javillo Realty Co. is now seeking to to recover from the Panama Railroad Company. The fill could not have been made at all without the use of the Panama Railroad Company's tracks, as the cost of the fill otherwise would have been prohibitive. The contract between Rodriguez & Uribe and the railroad company, by which the former was to reclaim the area in question for the latter, was duly recorded and was brought to the attention of the Panaman Government by the Governor of The Panama Canal, who requested the Panaman Government to respect the rights of the Panama Railroad Company under the contract. Later, when deeds were executed for all of the reclaimed area, the subsecretary of Fomento of Panama deeded to the Javillo Realty Co. the 4,000 square meters which belonged to the Panama Railroad Company, and the suit now pending against the railroad company is based upon that deed.

In instituting the suit on behalf of the Javillo Realty Co., Mr. Jose Rodriguez R. alleged that the 4.000 square meters in dispute were worth \$3,000. But the deed that the Javillo Realty Co. received from the subsecretary of fomento fixed its value at \$85,750. This discrepancy was called to the attention of the court, and the Javillo Realty Co. was asked to file a bond in conformity with the value of the property as stated in the deed and not as set forth in the railroad company's complaint filed in the court. The Panaman court agreed with our contention and has required the Javillo Realty Co. to file a bond in the sum of \$8,500, in conformity with the law of civil procedure of Panama. The bond has not been filed, and in all likelihood will not be filed, inasmuch as the Panaman law requires either a money deposit or a mortgage bond. There is no merit in the suit and it will doubtless be dismissed in the near future.

#### LEGISLATION.

There was but one act of Congress enacted during the fiscal year just ended which was limited in its scope to the Canal Zone. Several congressional enactments of a general character were enacted by Congress which applied to the Canal, such as the various appropriation acts, and some others of a general nature. The act of Congress of special application to the Canal Zone just referred to is entitled:

An act to remove a certain tract or lots of land in Cristobal, Canal Zone, from the operation and effect of the Executive order of the President of December 5, 1912, pursuant to the act of Congress of August 24, 1912 (Thirty-seventh Statutes, chapter 390, page 565). Approved, June 5, 1920.

The purpose of the act was to restore to the Panama Railroad Company its title and possession in the Masonic Temple and the lots upon which it is situated in the town of Cristobal, Canal Zone, so that the Panama Railroad Company might be free to dispose of this property to the Sojourners Lodge of Cristobal. The property is bounded on the north by Eleventh Street of the city of Colon, and on the east by Bolivar Street of the same city, and on the south by lot numbered 649, Cristobal, and on the west by a vacant lot.

Several Executive orders were issued by the President which were prepared in this office or submitted to this office for its examination before they were forwarded to Washington. These orders consisted of the following:

An Executive order, dated December 22, 1919, setting aside for a military reservation the area designated as "Quarry Heights." This area is occupied by the quarters of the commanding general

and his staff.

On December 22, 1919, the President set aside an area at Gatun for military purposes, under the designation of "Fort William D.

Davis.'

On December 30, 1919, the President issued an Executive order setting aside various areas under the designations of "Fort Clayton," "The Panama Arsenal," "The Engineers Depot," and the "Post of Corozal," These areas are located on the Pacific side of the Canal Zone and lie between the Corundu River and Miraflores.

Again on April 9, 1920, the President set aside the reservations known as "Fort Randolph," and "France Field," on the Atlantic

side of the Canal Zone, and to the east of the city of Colon.

On January 9, 1920, an Executive order relating to costs in the courts of the Canal Zone was issued by the President. Litigation in the Canal Zone courts has increased very materially in the last few years, and this litigation is not limited to cases arising within the Canal Zone, but involve suits that should more properly be brought in the courts of the Republic of Panama. The intent of the Executive order is to restrict this litigation by limiting the privilege of suing in forma pauperis to citizens of the United States, as is done in the Federal courts of the United States. Heretofore the litigants in civil cases in the Canal Zone courts could demand trial by jury without depositing a jury fee. The Executive order requires the payment into court of a jury fee of \$10. This is one-half as much as is required in the courts of the United States. It is only fair that litigants should contribute in some degree to the costs of litigation. Jury trials in the Canal Zone are very expensive to the Government and the Panama Railroad Company, inasmuch as the juries are necessarily made up of Panama Canal and Panama Railroad Company employees who are taken from their work to the detriment of the service.

The act of Congress known as the "Volstead Act," which regulates the manufacture, production, use, and sale of high-proof spirits for other than beverage purposes, and to insure an ample supply of alcohol and promote its use in scientific research and in the development of fuel, dye, and other lawful industries, effective October 28, 1919, provides that the enforcement of the act in the Canal Zone shall be under the control of the President, who is authorized to establish suitable regulations for that purpose. On January 7, 1920, the Pres-

dent issued an Executive order, entitled:

Executive order establishing prohibition regulations for the Canal Zone in conformity with the act of Congress.

By virtue of this order, the administration of the regulations is placed in the chief health officer of The Panama Canal under the direction of the Governor. The order prohibits the importation of intoxicants into the Canal Zone, except under the conditions prescribed in the order; that is to say, liquors for sacramental, scientific,

industrial, pharmaceutical, and medicinal purposes, may be introduced under the conditions prescribed in the Executive order. Punishment by a fine of not more than \$1,000 and imprisonment of not exceeding six months for the first offense, and by a fine of not less than \$200 or more than \$2,000 and imprisonment of not less than one month nor more than five years for a second and subsequent offense is prescribed in the order in conformity with the act of Congress.

On February 11, 1920, the President issued an Executive order authorizing charges for services rendered by the quarantine division of The Panama Canal. By virtue of this order, the Governor may, from time to time, establish a schedule of charges to cover services rendered by the quarantine division of The Panama Canal in the disinfection of vessels and their cargoes, for the transportation and subsistence of passengers while in quarantine, for placing guards aboard vessels when necessary, and for the inspection of vessels outside of the regular hours. These charges shall be paid to The Panama Canal by the person or interest receiving such service. All the laws, ordinances, and regulations in conflict with the order are repealed.

On March 1, 1920, the President set aside a part of the Punta Mala Lighthouse Reservation for the purpose of the Punta Mala Naval Radio Station, subject to the civil jurisdiction of the Canal Zone authorities. The lighthouse reservation, from which the site for the naval radio station was taken, was designated by an Executive order of the President some years ago. The area set apart for the radio

station is approximately 13.7 acres.

\* The Executive order of November 7, 1913, and other laws, orders. and regulations relating to the keeping and carrying of arms in the Canal Zone, did not meet the present conditions existing in the Canal Zone. The opening up of large areas by the cattle industry and the depopulation of towns along the Canal and the railroad, the occupancy of considerable districts of the Canal Zone by the Army, and other changes in conditions here, required an amendment in the laws bearing on the carrying and keeping of arms. In consequence, upon the recommendation of the Canal Zone authorities, the President issued an Executive order on March 6, 1920, to regulate the carrying and keeping of arms. This order repeals all previous laws, orders, and regulations. Its provisions are much more elastic than those found in the preexisting laws; and the Governor is given a wider latitude in withdrawing or extending the rules prescribed by the order to the various sections of the Canal Zone. The Executive order is based on section 4 of the act of Congress authorizing the President to make rules and regulations relative to police powers in the Canal Zone, approved August 21, 1916.

Experience had demonstrated that the quarantine regulations adopted for the Canal Zone and harbors of the cities of Panama and Colon were too rigid. These regulations were an adaptation of the quarantine regulations in force in continental United States. The operations of The Panama Canal developed conditions with respect to quarantine that are not to be found elsewhere, and it is fair to assume that new conditions will continue to arise, and in order to meet them an elastic system of regulations, within the control of the Governor, are necessary. The chief quarantine officer, after several conferences with this office, submitted new regulations, which met

with the Governor's approval and were forwarded by him to the President with the recommendation that they be promulgated in lieu of all preexisting regulations. Pursuant to the Governor's recommendation, the President, on March 31, 1920, issued an Executive order establishing maritime quarantine regulations for the Canal Zone and harbors of the cities of Panama and Colon, Republic of Panama, and all laws, orders, and regulations in conflict with that order were thereby repealed. The Executive order grants to the Governor authority to establish from time to time the necessary rules for the enforcement of the regulations established by the Executive order, and in doing this many provisions of the old law are eliminated, and their omission from the law will be supplied from time to time, when the needs of the Canal demand it, by rules to be issued by the Governor of The Panama Canal.

This office also disposed of a number of matters of an advisory character during the fiscal year at the request of the Governor, the heads of departments, and divisions of The Panama Canal and the Panama Railroad Company, and the Washington authorities.

Respectfully,

Frank Feuhler, Special Attorney.

Brig, Gen. Chester Harding, United States Army, Governor, The Panama Canal, Balboa Heights, Canal Zone.

# APPENDIX I.

# REPORT OF THE CHIEF HEALTH OFFICER, HEALTH DEPARTMENT.

Balboa Heights, Canal Zone, July 20, 1920.

Sir: I have the honor to submit the following report of the operations of the health department for the fiscal year 1920:

# GENERAL REMARKS.

One case of yellow fever off a ship from Corinto, Nicaragua, was admitted to Balboa quarantine August 10, 1919. This was a boy who had contracted the disease in Leon, Nicaragua. He died two days later at Ancon Hospital. There have been no cases of yellow fever originating on the Isthmus since 1905.

Eleven cases of leprosy were admitted to Palo Seco Leper Asylum,

all from the Canal Zone and the Republic of Panama.

An influenza epidemic started the first part of March, 1920. Cases of influenza and deaths from influenza and pneumonia were reported, as follows: March, 801 cases and 50 deaths; April, 314 cases and 52 deaths: May, 40 cases and 24 deaths: June, 138 cases and 7 deaths. The first cases were from Colon but later cases were reported from all parts of the Canal Zone and Panama and its suburbs. The schools, motion picture shows, and other places of assembly were closed for a period of two weeks. The majority of cases reported were among people who were ill-fed and physically weak—owing to their povertywhich condition was markedly prevalent immediately after the strike of February 24 to March 4. The epidemic probably started from the fleet of United States Naval vessels stationed in Colon bay from February 19 to March 1, of which the steamship Colombia had 10 cases and the steamship Pennsylvania 5 cases of influenza on board; the fleet reported 30 cases before arrival in Colon. The rise shown in number of cases reported during the month of June was the result of a local epidemic at the cattle pasture camp at Manawa—there being 82 cases from this camp during June. On March 21, 1920, a ship from Ecuador was received at Balboa quarantine with six cases of influenza on board; June 23, 1920, a ship from Peru was received at this station with 23 cases on board; in both cases the local passengers were detained in quarantine three days, and crew and other contacts among agents and port employees were observed and temperatures taken for three days. No new cases developed.

There were 28 cases of smallpox reported during the year. All were of a benign type, and no deaths resulted. Systematic vaccination was continued in the cities of Panama and Colon, and a vaccinator was sent to some of the interior towns of Panama, performing

vaccinations on all nonimmunes that could be reached. There were 2 cases in hospital on June 30, 1920.

No other maritime quarantinable diseases than those above enumerated arrived at or originated on the Isthmus during the year.

A free venereal disease clinic where both curative and prophylactic treatments are given, was established at Santo Tomas Hospital in Panama on August 25, 1919, and one at Colon—maintained by the American National Red Cross – on March 1, 1920. An educational campaign has been pushed, pamphlets distributed in English and Spanish, and moving pictures dealing with this question shown A notice, warning against all prostitutes, is handed by the quarantine officers to the crews of all incoming vessels. Meetings with Panaman, Canal Zone, military officials, and representative citizens have been held at which the program of attack as carried out in the United States was approved as the program for the Isthmus. However, as yet conditions in Panama and Colon remain basically unchanged. The standard forms of laws for the repression of prostitution and control of venereal diseases as compiled by the commission on training camp activities of the War and Navy Departments, were long ago submitted to the officials of the Panaman Government upon their request, but they have not seen fit to pass any laws modeled upon them. A number of alien prostitutes have been deported to their native countries, but prostitutes are still numerous in the two terminal cities. The incidence of venereal disease is very high in this portion of the world, and the existing conditions are deplorably unsatisfactory. The health department is powerless to control the high incidence of venereal disease without the cooperation of Panaman authorities able and willing to pass and enforce proper laws for its

The following table shows the probable place of infection of all malaria cases reported during the past two years:

	Employees.		Nonemployees.		Total.	
	1920	1919	1920	1919	1920	1919
Sanitated areas of the Canal Zone. Pasture eamps and plantations. Other areas in the Zone, outsides mitated districts Colon	202 149 12 54	184 292 21 36	407 8 20 52	779 35 90 63	609 157 32 106	963 327 111 99
Panama Areas outside the Zone and the terminal cities 2	49	32 32	79 261	110 550	128 338	142 582
Total	543	597	827	1,627	1,370	2, 22-

 <sup>&</sup>lt;sup>1</sup> There are practically no residents in these areas. All cases reported were residents of the Zone or terminal aftics who received their infection while hunting, riding, etc.
 <sup>2</sup> These cases are from interior towns, other countries, steamships, etc.

The average total number of employees during this fiscal year was 21,716, of whom an average of 881 were employed at cattle pasture clearing and on plantations during the year. This gives an annual rate per thousand for the two terminal cities and the sanitated area of the Canal Zone, for employees only, of 14.64 in 1920, as compared with 10.81 in 1919, while the rate for the pasture camps and plantations, for employees only, was 169.13 in 1920, as compared with 240.53 in 1919.

While apparently decreasing, the infant mortality continues high. Several factors contribute to this high rate, chiefly ignorance and poverty, and the hygienic and dietic errors that accompany these. Children of white American parentage living in the Zone do excep-

tionally well.

Pneumonia continues to be one of the chief causes of death, especially in the densely populated sections of Panama and Colon where, in spite of efforts to improve ventilation and lighting, many employees and their families are herded together in entirely inadequate quarters. It is a matter of frequent comment by Canal Zone physicians that sickness is far less prevalent in the modern, well-planned Canal

quarters than in the tenements of the two cities.

The highest death rate of the Isthmus is still due to tuberculosis, to which disease also applies what has been said of pneumonia. recent years a reduction in the number of cases is apparent, but no radical improvement in this condition may be expected until the housing situation in Panama and Colon is materially improved, adequate hospital facilities provided, and a comprehensive plan of campaign of education and prophylavis developed. A number of the tenement houses in Colon and Panama have been remodeled for the purpose of admitting sufficient light and ventilation. Pamphlets explaining the dangers and precautions necessary in combating the spread of this disease have been distributed freely. This educational measure is being further augmented at Colon by a visiting nurse who gives instructions, both oral and written, to the responsible members of the family about the precautions necessary to prevent the transmission of the disease to other members of the family. There is a real pressing necessity for more quarters being constructed of the right kind for our "silver" employees, such as are provided at La Boca on the Pacific side, Red Tank at Pedro Miguel, and Silver City at Cristobal. La Boca, especially, is a model town of its kind, with wide, well-paved streets, planting spaces and lawns, screened houses with modern plumbing, and a well-supplied commissary and restaurant. By constant supervision and training the colored population of this city has been given an education in sanitation that is evidenced in their appearance and surroundings and which could well be emulated by people of a relatively higher social strata and culture.

Another effort on the part of The Panama Canal to improve living conditions for its laborers, especially those whose employment is of a temporary nature, is seen in the reopening of a portion of the Zone to unemployed, able-bodied men, who are given quarters and a generous portion of land to cultivate, in return for which a nominal rent is paid and the tenant obligates himself to work for The Panama Canal a stated portion of the year, if called upon, at the regular rate of pay for labor of the kind he performs. The old town of Las Cascadas, on the west bank of the Canal, since construction days and until recently used as an Army post, has been assigned for this purpose, as here are already available quite a number of houses and an adequate water supply. If the unemployed Negro can be induced to take advantage of this proposition, it will help solve one of our most difficult problems—that of providing a reservoir of labor for emergency use that will be self-supporting between periods of employ-

ment.

Where it is possible to do so, employees living in regular Zone settlements are encouraged to engage in gardening outside of working hours, and adjacent tracts of land are designated for this purpose. As drainage operations advance, more and more ground is made available for cultivation, and it is hoped that ultimately every family that so desires may have their own garden spot where a greater part of their food can be grown.

## VITAL STATISTICS.

#### EMPLOYEES.

A new method of finding the average number of employees was adopted during the fiscal year. In previous years the total number of names on the pay rolls each month was taken as the number of employees, and the average force was considered as the average of the 12 monthly statements. Inasmuch as many of the silver-roll employees were in easual employment and their names appeared twice or several times on the rolls, the average thus deduced was larger than the facts warranted. It was, therefore, decided to consider the average force as that represented by the number actually at work on the second and last Wednesday of each month, except that in the case of the docks and coaling plants the average force for the month is used. The result of this change of method has been to make our basis for statistics of employees more accurate than heretofore, but it has also resulted in giving a base for 1920 which is not properly comparable with that for the previous years.

In determining the division by race, a careful study of the silverroll force was made to determine how many persons properly classed as "white" are in that force. It was decided to use 500 as the number. Our segregation by race is, therefore, determined by subtracting 500 from the silver-roll numbers and adding 500 to the

gold-roll numbers.

The average number of employees on the rolls of The Panama Canal and the Panama Railroad for the year was 21,716, as compared

with 20,172 for the fiscal year ended June 30, 1919.

The total admission rate to hospitals and quarters was 658.45, as compared with 617.79 for the fiscal year ended June 30, 1919. The total admission rate to hospitals only for the year was 225.69, as compared with 235.82 for 1919, and for disease alone 192.48, as compared with 204,09 for 1919.

The total death rate for 1920 was 9.49, as compared with 8.43 for 1919. The noneffective rate for 1920 was 14.85, as compared with

16.87 for 1919.

The total admission rate for malaria, hospitals, and quarters, was 25, as compared with 29.60 for 1919. The constantly noneffective rate, hospital and quarters, was 0.70, as against 0.74 for 1919, and 0.72 for 1918.

The admission rate for typhoid fever was 0.18, as against 0.10 for 1919; there were no deaths from typhoid fever in the years 1918,

1919, and 1920.

The death rate from tuberculosis (various organs) was 1.43, as compared with 1.49 for 1919. The death rate from pneumonia (lobar) was 0.83, as against 0.99 for 1919.

The five diseases causing the highest number of hospital admissions, with their rates, were as follows:

	Number of hospital admissions.		Rate per 1,000.	
	1918-19	1919-20	1918-19	<b>1919–</b> 20
Influenza Venereal dissases Malaria Diseases of the eyes and theirannexa. Tuberculosis.	459 516	604 548 503 156 47	29.55 22.75 25.58 6.15 2.58	27.81 25.23 23.16 7.18 2.16

The five diseases causing the highest number of deaths, with their rates, were as follows:

	Number of deaths.		Rate per 1,000.	
	1918-19	1919-20	1918–19	1919-20
Tuberculosis (various organs). Pneumonia (broncho and lobar). Influneza i	30 24	31 25 21	1.49 1.19	1. 43 1. 15 . 97
Chronic aephritis Organic diseases of the heart	8 16	19 10	.40 .79	. 87

<sup>1</sup> Many deaths are reported as "Influenzal pneumonia"; until the present year these were classified as "pneumonia," which accounts for no deaths from influenza among employees for last year.

# EFFECTS OF RACE.

For disease only, the admission rate to hospitals and the death rate for white employees was 287.16 and 3.37, as compared with 168.10 and 9.32 for black employees. The noneffective rate for disease and injuries for white employees was 18.11, as compared with 14.01 for black employees.

## CANAL ZONE.

The average population for the Canal Zone for the year was 30,954, as compared with 21,707 for the last year. Military population is included in the report for this year; during the period of the war the military population was not included in any of the statistical rates of this report, except in the table under sanitation showing total malaria cases and percentages.

From this population 253 deaths occurred during the year, 219 of which were from disease, giving a rate of 7.08 for disease alone, as

compared with 9.40 for 1919.

The death rate from tuberculosis was 0.81, as compared with 1.34 for the year 1919. Deaths from tuberculosis this year were 10 per cent of all deaths.

The birth rate for the year was 22.26. The infant mortality rate, based on the number of births reported for the year, was 34 for white and 153 for black children, with a general average of 110.30. Of the total births reported, 6 per cent were stillbirths.

Of the total deaths reported, 45 per cent occurred among children

under five years of age.

#### PANAMA CITY.

The average population of the city for the year was 61,369, the census not having been taken since June, 1917. From this population, 1,278 deaths occurred during the year, of which 1,234 were from disease, giving a rate of 20.11 for disease alone, as compared with 21.85 for the preceding year. Tuberculosis gave a death rate of 3.80, as compared with 4.30 for 1919 and 4.53 for 1918; this was 18 per cent of the total deaths, as compared with 19 per cent for last year.

The principal causes of death, compared with last year, were as

follows:

	1918-19	1919~20
	1010 10	2020 20
Tuberculosis (various organs)	264	233
Pneumonia (broncho and lobar)	168	193
Diarrhea and enteritis	130	159

There were 2,393 births reported for the year, giving a rate of 38.99. The infant mortality rate, based on the above number of births was 150.44. Of the total number of births reported 8 per cent were stillbirths.

Of the total deaths reported 42 per cent occurred among children

under five years of age.

## COLON.

The average population of the city for the year was 26,078, the census not having been taken during the past year. From this population, 567 deaths occurred during the year, of which 527 were from disease, giving a rate of 20.21 for disease alone, as compared with 23.28 for the preceding year.

The principal causes of death as compared with last year were:

	1918-19	1919-20
Tuberculosis (various organs). Nephritis (acute and chronic).	108 38	101 56
Pneumonia (broncho and lobar)	89	47

There were 1,001 births reported for the year, giving a rate of 38.38. The infant mortality rate, based on the number of births, was 136.86. Of the total births reported, 5 per cent were stillbirths.

Of the total deaths, 38 per cent occurred among children under 5

years of age.

# ANCON HOSPITAL.

#### [Col. Louis T. Hess, U. S. A., Superintendent.]

Permanent buildings.—The bakeshop, located in the kitchen mess halls building, was found unsatisfactory for the purpose designed owing to cramped space, inconvenient location of ovens, and lack of insulation in ceiling over ovens, upon which is situated the floor of the diet kitchen; it was evacuated as such and occupied by the general mechanic as a workshop and storcroom. All bakeshop

apparatus was dismantled and will be reinstalled in that part of the power plant building now housing the carpenter and electrical shops. A two-story addition to the power plant building is being erected, the ground floor of which is for the carpenter shop—twice as large as the former shop; the second floor will be used for electrical shop and electrical stores and for the miscellaneous general supplies of carpenters, painters, and plumbers.

Building 210, maids' quarters, was removed from its former location and is now situated to the right of the laboratory in what

was formerly the poultry yard.

Building 246, which was used as a chronic ward, was razed by the supply department for recrection at one of their plantations, and the

chronics were transferred to Corozal Hospital.

Roads.—In order to reduce to a minimum all noise nuisances, the main hospital road, which is now named "Gorgas Road," was made a one-way road, downhill only, and the hospital interior road closed

to public traffic.

Grounds.—All lawns have been graded and sodded, and many flower beds, plants, trees, and hedges have been set out around the hospital buildings. Considerable work has also been done on the hillside in the rear of the hospital buildings. Rocks have been picked off to fill depressions at foot of the hill, which have then been graded off with dirt dressing. One hundred orange trees, 50 grapefruit trees, and 25 avocado trees have been set out on this hillside.

Surgical clinic.—During the year 1,994 major operations and 4,831 minor operations were performed. There were 3,134 cases visited the out-patient department; 314 obstetrical cases were delivered.

Medical clinic.—There were 2,611 cases treated in the out-patient

department, for whom 1,707 prescriptions were written.

Eye and ear clinic.—There were 7,443 cases examined or treated in the out-patient department, for whom 2,606 prescriptions were written, 967 refractions were made, and 976 operations performed.

X-ray clinic.—A total of 3,333 cases were handled: 7,197 plates and 1,708 dental films were taken and 84 treatments given. The following new apparatus was installed in Ancon Hospital X-ray laboratory during the year: One bedside X-ray unit, for service in the hospital at bedside of patients; 1 United States Base Hospital trochoscope; 1 horizontal plate changer for chest plates, with stereographic tube stand; an overhead high-tension switch; new screens, tunnels, and reels. In addition, some improvements were made on the vertical fluoroscope and on the stereoscope, bringing them up to date.

Steward's department.—During the year the patients' dining rooms for white and colored males were put in service. There were 164,218 rations issued to Ancon Hospital patients and 92,790 rations to personnel entitled to same, a total of 257,008 rations; the net cost of

same was \$101,972.55, exclusive of preparation and serving.

Maintenance and repairs.—The usual routine repairs were made by the hospital artisans, and in addition miscellaneous furniture and supplies were manufactured and certain changes and additions made to buildings, the principal items being sanitary drinking fountains, additional sinks, lockers, shower baths, and toilets installed in various sections of the hospital; most of the beds, bedside tables, and chairs were reenameled; various doors were lettered; wooden strips were placed over screening on verandas to protect screening; 127

coffins were manufactured; also flower stands, tables, and water sprinklers; partitions were installed in isolation ward.

Comparative statistics.—The following table is for Ancon Hospital,

including Corozal Hospital:

	1920	1919	1918	1917
Patients, nonresi lent of the Canal Zone, Panama, or Colon: Number a lmitted. Pays treated, total. Military patients: Number a lmitted. Pays treated, total. All classes of patients: Number a fmitted. Number a lmitted.	1, 294 39, 782 779 14, 672	939 31,779 1,392 22,217	586 28,089 4,165 49,067	350 26, 497 2, 469 33, 494 11, 170
Days treated, total.  Cost of subsistence supplies per patient per day—Ancon Hospital only.  Cost of treatment of hospital patients, including subsistence, me licines, and all attendance—Ancon Hospital only.	\$0, 3967 \$0, 3967 \$3, 43	\$12,737 \$0.3495 \$2.67	\$19,908 \$0.315 \$2.78	\$11,451 \$0,3369 \$2,35

## BOARD OF HEALTH LABORATORY.

[Dr. Lewis B. Bates, Chief.]

The influenza epidemic this spring necessitated a large amount of laboratory work. Owing to the sudden and temporary increase in the malaria rate, mostly at the Atlantic end, just at the beginning of the year, an effort was made to ascertain the malaria index of Camp Bierd, Cristobal, a laboring camp from which many cases were coming. Blood films and spleen examinations were made on 514 individuals. The splenic index was 13 per cent, the parasite index 0.4 per cent. The enlarged spleens were mostly found in natives from the interior who had been recently employed.

The determined effort being made by the health officer of Panama to give the city of Panama as pure a milk supply as that enjoyed by the Canal Zone and the best-regulated communities in the United States has necessitated the bacteriological and chemical examination of a large number of milk specimens, and with the continuation of this plan this work will become a part of the permanent routine of

the laboratory.

There has always been a demand for the laboratory to do a larger number of the simpler examinations, such as the examination of blood films for malaria parasites, eye smears for the gonococcus, urines for albumin, and similar examinations. It has been found advisable for the laboratory to meet this demand, and an increasing amount of

this work is being done.

The work in the chemical laboratory has been of the usual general character. It has included the examination of milks, beverages, drugs, canned foods, miscellaneous supplies, as well as clinical examinations requiring quantitative determinations. As a routine measure, toxicological examinations have been made in every instance of death from unknown causes. In addition to the work done, preparations have been made to extend the scope of the work in blood chemistry so that all quantitative determinations for diagnostic purposes may be made rapidly and in as large numbers as desired.

The entomological department covered the field of medical, sanitary, and economic entomology, with special reference to the identi-

fication of mosquitoes, of other arthropods affecting the health of man and animals, inspection of mosquito-breeding areas, the study of insects infesting food and stored products, household insects, forage-crop insects, vegetable and truck crop insects, and the study of the more important pests of tropical fruit trees. The work in economic entomology was of a cooperative nature with the bureau of entomology, United States Department of Agriculture, which bureau had established a temporary field station at this laboratory and detailed an entomological inspector of the Federal horticultural board in charge of the station; upon the departure of this inspector in August, the project was placed temporarily in charge of the board of health entomologist as collaborator of the bureau. The main object of the temporary field station is to learn what dangerous pests occur in the Canal Zone, and whether the concentration of traffic and commerce from all parts of the world is not adding new and serious pests to our territory. Such dangerous immigrants, together with the endemic pests, would be potential menaces to continental United States. The surveys and inspections made thus far, covering a period of about two years, have yielded a large amount of valuable information regarding pests already established, and that our piers, especially those at Cristobal, are splendid mediums for the introduction into the Canal Zone of new and serious enemies. Such insects are also a danger to other cargo on the piers awaiting transshipment because it is very easy for eggs or other stages of these insects to reach such cargo and thus reach other ports. These facts indicate the necessity for a port-inspection and plant-quarantine service, with adequate facilities for vacuum fumigations at both terminals, as the only means which will protect against such dangerous insects.

The professional staff of the laboratory remains the same, but the number of technicians has been increased to six, on account of the

increased work.

#### COROZAL HOSPITAL.

[Dr. Louis Wender, Superintendent.]

The general admission rate has been about the same as in previous years. On June 30, 1920, there were 344 patients in the hospital, and 26 chronic cripples. During the year a large number of patients were deported to their native homes. Various forms of amusement have been continued. The occupational department where rugs, hats, and other small items have been made, received a new impetus the latter part of 1919. The officers of the Mental Hygiene Society in New York sent down, free of charge, an industrial instructor who remained here three months, established a workroom and instructed the chief nurse in the essentials of an industrial department. The occupational department has been established on a high standing, as in the best hospitals in the United States. Our patients, although of a lower strata, have taken up with this work very enthusiastically and are making rugs, toys, children's furniture, weaving bags, block printing, wood carving, etc. This kind of work is very beneficial to this class of patients, as it not only removes them temporarily from their world of fantasy, but also reeducates them and stops their mental deterioration. Most of the articles made have met a ready sale, and it is hoped that in the future this department will more than pay for itself. This

new undertaking has not curtailed any of the previous work, such as farming, laundry work; or work in the sewing room. Most of the male patients are still cultivating the land; we have opened up several acres of new land with patient labor, planting most of it in yams. Machinery for making brooms has been ordered and will be installed in the next few months. This will necessitate a building and the installation of light machinery. In this building we will be able to train some of our patients along with the cripples in various kinds of industry.

Buildings.—The new hospital ward "K," which was erected during the year, with accommodations for 80 patients, was occupied in January. The ward which was previously occupied by the working patients is now used as an isolation ward for tubercular patients and two cases of nerve leprosy that are also insane. The new ward has relieved the congestion to a certain extent, but it was necessary to transfer 26 chronic cripples from Ancon Hospital to this hospital, in order to complete the removal of old hospital buildings at Ancon.

A road from the dairy to the new feeding platform for pigs was built by our own help, and a feed room has been constructed at the end of the platform. The chicken house was demolished and the old lumber used for the construction of new feed room. A fence has been placed around the new feeding platform and the use of the platform has been started.

The second-story porches and the roofs over same in most of the buildings have been painted. The male and female dining rooms

and the kitchen were also painted.

An addition has been built to the nurses' quarters, adding four rooms with a front and back porch. The reception room was enlarged and refinished.

A new coal bin has been built to facilitate the unloading of the coal

cars on the siding.

Grounds.—The grounds in the hospital inclosure have been kept in order by the patient's help. One thousand feet of drain has been laid in the hospital grounds by them, improving the appearance of the grounds as well as the sanitation. All the walks in the inclosure have been repayed, and new cement walks have been laid around

the hospital quarters by our patients.

Dairy.—Part of our pastures were cleared during the year. On December 9, 1919, 25 Holstein cows arrived from the States. We were unable to obtain them except from the noninfected tick area in the States, and it was therefore necessary to immunize them here against the tick fever. The inoculation was done by the staff of the board of health laboratory; these cows were from 2 to 4 years of age, and six died probably as a result of the inoculation. One registered Holstein bull calf was purchased from the cattle industry as sire for this year. As this bull was too young, we obtained, through the kindness of Mr. Frank O. Arias, of Panama, the loan of a registered Holstein bull, without charge, which is being used with the Holstein cows.

Part of the equipment for the refrigerating apparatus for the milk room has arrived, and we hope to have this installed shortly; this will enable the cooling of the milk to be done by mechanical refrigerating, thus reducing the cost and also lessening the amount of

handling.

Our milk has continued to be of a high standard, being pasteurized morning and evening after milking; it shows a low bacterial count and a fat percentage of 4 to 5.

The tuberculin test has been made of all cows. On June 30, 1920,

the herd consisted of 3 bulls, 74 cows, and 38 calves.

Piggery.—Most of our pigs, after being fattened, are sold to the supply department. Since the early part of November a pig has been slaughtered each week for the use of Ancon Hospital. On

June 30, 1920, we had on hand 27 hogs and 120 pigs.

Garden.—With the high cost of seed and labor, the garden has been a losing proposition, and it was deemed advisable to reorganize the farm. This has now been effected; the cripples, instead of receiving a salary, are given lodging and subsistence, and a tract of land to cultivate as they please; seeds are furnished them at cost, and sale of their products is handled by the farm.

We have had no success in raising rabbits for the board of health laboratory, as most of them die of coccydiosis. We are now more successful than formerly in raising guinea pigs, and our stock is

gradually increasing.

The number of cripples remaining at the hospital June 30, 1920, was 4 white and 27 black, being a reduction of 21 during the year.

#### COLON HOSPITAL.

[ Maj. Guy L. Quails, U. S. A., Superintendent.]

Colon dispensary, which is located within the hospital, is under the direction of the hospital, and it is necessary to correlate and harmonize the work of the dispensary with that of the hospital. The Colon district physician has charge of the medical cases in hospital. One of the staff physicians and the medical interne assist the district physician in this work. The superintendent has charge of surgical cases and supervises all work of the hospital and dispensary.

Emergency cases from the dispensary are admitted to Colon Hospital: others, both medical and surgical, are transferred to Ancon or Santo Tomas hospitals. Efforts are made to keep the number of

patients under treatment at Colon Hospital to 50 or below.

During the past year much work and effort has been expended toward beautifying the hospital grounds. Considerable dirt fill will be necessary in the near future in front of the hospital if appearances are kept up to what they should be. At present grass can not be grown over the area nearest the bay on account of lack of sufficient earth, the coral formation supporting very little vegetable

growth.

The institution is located in an almost ideal place for a tropical hospital. The surrounding grounds are ample for a much larger institution. It is believed that with the growth of Cristobal, Colon, various Army and Navy posts and stations, the increased amount of shipping and business on this side of the Isthmus, the demand will be urgent for new construction in order that infectious diseases originating on this side of the Isthmus and those brought in by ships may be treated here. A ward for the care of a larger number of obstetrical cases will soon be a necessity.

As the Republic of Panama does not maintain a hospital on this side of the Isthmus for the care of its indigents, it is believed that

the installation of a charity ward attached to this hospital and supported by the Republic of Panama should receive serious considera-

tion.

The hospital building proper has been rescreened during the past year and necessary reinforcements to screening have been placed in the wooden framework in order to withstand the strong winds of the dry season. This work was done by the hospital artisan, and has reduced the cost of renewing screening considerably.

As mentioned in last year's report, the paint on the interior walls of the hospital has cracked and peeled off badly. Sufficient funds for repainting were not available last year, and with the big cut in our estimates, we will probably not be able to paint the interior of

the hospital this coming year.

The reports of professional work of consequence are published in the statistical tables, and it is unnecessary to repeat them here. It would also be futile to render them in a more condensed or informative manner.

## SANTO TOMAS HOSPITAL.

[ Maj. E. A. Bocock, U. S. A., Superintendent.]

Owing to the many improvements made during the year, this institution—of which the superintendent, two physicians, chief nurse, and two ward nurses are employees of The Panama Canal—deserves special mention. Although the institution is financed by the Republic of Panama, with the exception of paying the above employees, we are vitally interested in its operation and management.

Training school.—On January 30, 1920, the third graduating class of the Santo Tomas Hospital Training School for Nurses, consisting of nine nurses, finished the course and received their diplomas. This makes a total of 28 Panaman nurses who have been graduated from this school since its beginning. The training school has made steady

progress throughout the entire year.

General.—The buildings, many of which are very old and practically falling down, have been repaired, painted, and rendered habitable for another year. All the debts of the institution, of which there were a large number, have been paid during the year and its credit reestablished. A practical system of bookkeeping and property accounting has been instituted and a systematic survey of the financial and economic situations made and applied. In addition to this all attention possible has been devoted to improving the professional services of the hospital, and while this is far from being ideal it is undoubtedly advancing in efficiency. The principal new works that have been undertaken during the year were the establishment of the venereal clinic and the beginning of construction of the new Santo Tomas Hospital.

Venercal clinic.—On August 25, 1919, a venereal clinic was established at this hospital, on a plan similar to the clinics conducted by the Public Health Service in many parts of the United States. Since its beginning this clinic has met with complete and somewhat gratifying success. From September 1, 1919, to June 30, 1920, there have been 2,134 new admissions to the clinic; of these 1,513 were men and 621 women. During this period the patients under the care of the clinic received 11,241 treatments, dressings, or consultations. Salvarsan to the extent of 568 doses was administered, as well as 762

injections of mercury. Surgical operations numbering 318 were performed upon clinic patients. The treatments given in the clinic are absolutely free to all persons who are unable to pay, but a slight charge is made in cases where the patients have some means. Wassermann examinations are made on practically all patients reporting to the clinic, and free Salvarsan is given whenever indicated.

New Santo Tomas Hospital.—For many years it has been the hope of the Panaman Government to construct a new and modern institution, but owing to numerous political changes, financial deficiencies, etc., it has never been possible to make this project a reality until the year 1919. At that time the National Treasury of the Republic was receiving approximately \$25,000 per month from the liquor tax and the national lottery, and with this money it was decided to commence the construction of the new hospital. Several sites around the city were investigated and it was finally decided to construct the new institution at a site known as El Hatillo, which is a high point facing the Pacific ocean, in the suburbs of the city of Panama. The official ground breaking took place on November 15, 1919, and since that date active work has been carried on until the present time, and the construction work is now well underway.

The layout of the institution will cover approximately 14 acres, or nine city blocks, and when completed will have cost about \$1,000,000. The buildings, which will be 12 in number, will be arranged in rectangular form, fronting by the main building which will face the sea, and flanked on either side by annexes and contagious disease and tubercular sections. The buildings will be of reinforced concrete and concrete blocks, and the whole layout will be linked together with a meshwork of streets and sidewalks affording easy access to every part of the grounds. A retaining sea wall is being constructed along the entire frontage of the institution, which will control the unusually high tide that is present on this part of the Pacific coast. The space of 4 acres just between the front of the hospital and the sea wall will be occupied by ornamental gardens filled with tropical plants and flowers, with a fountain in the center. From Panama City an elegant boulevard is being constructed along the seashore to the front of the new institution, and the lands adjacent to the hospital grounds are being filled and leveled in order to make the surroundings sanitary.

The main building of the new hospital will be 210 feet in length, 60 feet in width, and four stories high, and will be augmented by three annexes of practical similar size, which will be joined by corridors to the main building. The venereal, infectious diseases, and tubercular sections will be separate buildings, or in reality hospitals in themselves, each having a capacity of approximately 100 patients. The total capacity of the entire institution will be 600 patients normally, with facilities for emergency crisis expansion to 900 patients. Adequate quarters are being provided for the several staffs of doctors and nurses, and separate buildings are under construction for the laboratory, morgue, power house, kitchen, shops, and vehicles. A laundry and bakery will be included in the utilities of the new institution. Classrooms for the nurses training school and for the post-graduate school of tropical medicine which is contemplated, will also be included in a separate building.

Modern equipment and facilities will be installed throughout the new institution. Sound proof walls, silent bell-call system, floor lights, and inclosed clothes chutes will be installed in each of the hospital buildings. The hospital will be equipped with four large operating rooms connected with the X-ray suite, and the surgical equipment in these departments will be modern in every way. The entire fourth floor of the main building will be devoted to the surgical and X-ray suites, the third and second floors to medical and surgical wards, and the first floor to offices, library, and classrooms. The entire basement of the main building will be occupied by the dispensaries, venereal and dental clinics. A radium department will be a feature of the surgical suite and hydro and electro therapeutic installations will also be added to the institution.

The appliances and accessories for use in equipping the institution will be purchased new in the United States, and when finished the Santo Tomas Hospital will undoubtedly be the finest institution, except Ancon Hospital, south of the United States, or a close second

to any similar general hospital in the world.

### PALO SECO LEPER ASYLUM.

[Mr. F. D. Tucker, Superintendent.]

The number of cases on hand at the first of the year was 76, including two temporarily at Ancon Hospital, for treatment of diseases other than leprosy. There were 11 admissions—three from Colon, two from Gatun, one from Empire, four from Panama, and one from Juan Diaz, R. P. Three deaths occurred during the year. Two patients were paroled; these were afflicted with the nerve type of leprosy, which is considered noninfectious; they will report to the health department once every six months for examination and report as to condition. Four patients were discharged; they were in good physical condition and repeated examinations failed to show the presence of leprosy bacilli. All the patients paroled or discharged were either taken care of by their families or secured promise of employment before being discharged. Two patients who were insane and suffering from the nerve type of leprosy, were transferred to Corozal Hospital for the Insane. One patient was deported to his home in Martinique, and one to Barbados. There were 74 patients in the institution at the close of the year.

The buildings, walks, fences, etc., have been kept in good state of repair, mostly by patient labor. The interiors of several of the buildings were painted. The grounds have been generally improved, trees and hedges planted, and a new pier is being built. A new site for the institution has been surveyed on the high plateau in the rear

of the present station.

A distinctive currency for use at this institution only was put into circulation; it has the advantage of preventing purchases of liquor from Panama, preventing savings for escape, and does away with the use by the general population of money which has been handled by these lepers. A savings bank was started for the patients, in which there are several depositors.

One wedding took place during the year, and the husband has built a cottage for which material was furnished. The whole station was interested in this marriage, and the moral effect is good. The

question of children was solved by a vasectomy done on the husband,

upon his written request.

Farm produce from patients' gardens is coming in. We are trying to teach better farming by means of the station garden, and we have goats and the best breeds of pigs. The ideal is to have the patients raise all the food consumed:

#### DISTRICT DISPENSARIES.

Our district physicians have continued to care for the medical needs outside of hospital treatment, of employees, their families, ships passing through the canal, etc., in a satisfactory and efficient manner. Their services to passengers and crews of ships are constantly increasing.

# DISTRICT DENTISTS.

Due to the amount of dental work required by employees and their families, a third dentist has been authorized for Ancon, who will do his work in the same office as one of the present dentists. An additional dentist has also been appointed at Colon, and part of old Colon Hospital buildings fitted up for his office. We now have a total of nine district dentists, all of whom are kept busy. They are now all on a no-salary basis.

## SANITATION.

#### CANAL ZONE.

[Dr. D. P. Curry, Assistant Chief Health Officer in charge.]

This consists mainly in antimosquito work, although the duties of sanitary inspectors are many and varied—antirat work, antifly work, inspection of hotels, restaurants, quarters, and barber shops, disinfections, maintenance of cemeteries, and general sanitary work. The four sanitary districts of the Zone are Ancon, Balboa, Pedro Miguel, and Gatun; their territory has not changed during the year, with the exception that the former Army post at Las Cascadas is now sanitated by our force, as this town was turned over to The Panama Canal and opened up by the supply department for silver

employees of the Canal.

The beginning of the fiscal year was marked by a very high malarial rate. The undrained swamps in the neighborhood of Colon, Cristobal, and Gatun were giving off unusual swarms of Anopheles albimanus and tarsimaculata. The screens of the Washington Hotel and Colon Hospital were so thickly covered that a larvacide spray was used repeatedly as the easiest way of destroying the invaders. There was no Anopheles breeding nearer than the Margarita road swamp—nearly 2 miles by direct flight from the hotel, and a mile and a half from New Cristobal, with about a mile of open water of Manzanillo Bay intervening; there is very little doubt that flight took place over this distance from the swamp to the points mentioned. To have come from any other breeding place they would have had to fly a greater distance and over the full length of Colon and Cristobal, the intermediate parts of which were free from Anopheles. The prevailing winds at this season are variable and light.

The laborers' settlement of Camp Bierd, the coaling plant, and the dry dock, all south of Cristobal, were also heavily infected and

Anopheles were found to be coming in great numbers from the swamps of Telfers Island and the vicinity of Mount Hope. Sea-level ditches were placed in these latter swamps in order to drain the territory within a mile of the dry dock and all dairy cattle were removed

beyond that area.

The Army sanitary inspector, Mr. J. B. Shropshire, made sea-level ditches in the Margarita swamp, on account of its nearness to France Field and Fort Randolph; this was drained into the bay and Coco Solo river, so that fresh water no longer gathers here and the tides reach practically all parts of it. It had previously been proposed to fill this swamp by suction dredges, pumping spoil from the sea at an estimated cost of nearly a million dollars, whereas the expedient adopted by the Army inspector cost but a few thousand dollars and

will probably prove effective as a sanitary measure.

Owing to the high Anopheles prevalence and increased malaria rate manifested at Gatun at the beginning of the rainy season in 1919, observations were made which showed that enormous flights of mosquitoes were coming across the Canal from the swamp back of fill 3 formed by damming of water between the river dike and the spoil of the French canal, making a swamp nearly a square mile in area, the greater portion of it within a mile of Gatun locks. Experiments made by Mr. J. A. Le Prince, former chief sanitary inspector, in 1913, demonstrated flights from this swamp at a time when spoil was being pumped into it by suction dredges; but because of the nearly flat slope and luxuriant vegetation that established itself, and the tremendous precipitation of the rainy season, it appears that the swampy condition reappeared so as to permit prolific Anopheles breeding again. In July, 1919, work was begun in this swamp by putting a large ditch through the western part of it, with laterals toward the Canal at about 500 foot intervals, and now no water is to be found there except at its furthermost northern extremity.

Other swamps in the vicinity of Mindi were drained and the continuity of the old French east diversion from Boca Mindi to the canal was restored by connecting the interrupted portions through a culvert

under the railroad.

At Pedro Miguel extensive tile drainage was installed in the fortification clearings formerly used as cattle pastures. Owing to the difficulty of controlling *Anopheles* breeding in cattle pastures, it has been found necessary to insist more strictly upon observance of the rule promulgated in 1916 that no cattle pastures be permitted within

a mile of sanitated settlements.

In the Ancon-Corozal district the outlying areas requiring maintenance by oiling and other temporary measures have been put in better condition by the construction of open ditches lined with concrete sectional half-round drains or by the installation of rock-covered concrete tile. It has been found that precast concrete drains are far cheaper than clay tile, and are equally satisfactory for all our purposes. The health department is now manufacturing all its own drains at the larvacide plant at Ancon.

In connection with the construction of the new Army camp (Fort Clayton) at Miraflores, the surface of the Cardenas river—a prolific *Anopheles* producer has been lowered 7 feet by tunnelling under the floor of the concrete railroad and wagon bridge, admitting every tide and allowing the river to reduce to a very small stream between

tides. Several large ponds also were drained or controlled in this area; the sanitation of Corozal profits thereby, as all these breeding places

were close enough for flights into the residence section.

The Balboa district required no extensive construction during the year, but the large hydraulic fill north of town demands an increasing amount of attention because of unequal settling, and also because of its becoming grassed over, holding and concealing the water of the rainy season and allowing it to seep out at the margins of grassy spots so as to produce sufficient moisture on the surface for breeding. Ditches dug in the material are rapidly obliterated by the rains; also the contours change with settling, so no permanent work can as

vet be attempted for its control.

The two large Army posts of permanent concrete construction will soon be completed. Each will accommodate a full regiment of infantry and both will require an extension of our sanitated areas to protect their soldier populations. Fort Clayton, at Miraffores, presents no unusual features of sanitation. The Cardenas River will have to be "trained" for some distance above the post, and there will appear the usual small streams, springs, and seepage areas to be controlled. Fort Davis, at Gatun, is not so well situated, being in close proximity to large, flat, swampy areas, in which cattle are pastured, so that quite extensive and expensive work should be done before soldiers are stationed there. From some of the nearby pastures the cattle must be removed and their hoof prints eliminated by filling or grading. It has been found impossible in our wet season frequently even in steep hill land, to drain pastures so that they will not be punched up by the feet of cattle. These hoof prints are always favorite breeding places for Anopheles and to control them effectively by oiling is impracticable and costly because of the difficulty of searching out and finding every one of them.

Cattle camp malaria.—In spite of the administration of quinine in 10-grain doses each night to such employees of the cattle pasture clearing camps as will accept it, the malaria rate of these camps continues high. They are largely recruited from the natives of the Republic of Panama, the greater number of whom are probably chronic carriers of the malaria organism. Living in temporary, open, thatched bunk houses, on the banks of lagoons and streams, as they hew out clearings in the virgin jungle where little sanitation is feasible, they are continually exposed to attack by hordes of mosquitoes. The best solution of the problem seems to lie in providing suitable screened buildings of a knockdown portable type if necessary, and a more routine administration of quinine as a

prophylactic.

Rats and antiplague work. —Because of the presence of plague in both North and South American ports, the possibility of its introduction here is ever borne in mind. Systematic rat destruction is done in the terminal cities by poison and by traps, and all rats and mice caught or found dead (if not too badly decomposed) are sent to the Board of Health Laboratory for autopsy. No plague infection has been found in any of these. Building regulations require thorough rat-proofing of all new construction and also where extensive repairs are made upon old buildings. Rats are numerous in the jungles and pastures of the Isthmus, and it is realized that our best safeguard—

in addition to quarantine measures-lies in building the rat out of

inhabited areas.

Fly breeding.—Unremitting diligence is exercised to keep the Canal Zone as free from flies as possible. Whenever flies are noticeably present a search is at once instituted for their source—usually with success. A large proportion of the ships arriving at canal ports have fly breeding aboard them. Horse manure continues to be the chief source of house flies, and many attempts have been made to devise some economical way of treating the manure so as to conserve its fertilizing value without producing flies. Composting in pits alone does not make the manure fly-proof. In properly constructed and protected pits the primary infection (which occurs here immediately after the dropping of the manure) is entirely killed in a few Prolonged retention in the pit renders it somewhat less attractive than fresh manure to the flies, but it has been definitely shown that manure composted even as long as six months in a tight receptacle will become blown on exposure. Possibly if some way of introducing air (oxygen) into the mass while composting could be devised, the manure would cure to a state not attractive to the fly, but the manure of this country, due to the great amount of green feed used, contains considerable liquid, so that the compost pit acts in reality as a silo in preserving manure for long periods. The method now in use is to remove the manure from the pits at any time it may be needed after 15 days composting, mixing it thoroughly with an equal quantity of fresh earth, and spreading at once upon the ground or using as a top dressing 3 inches thick. No fly breeding is found in manure so treated. Some of the Chinese gardeners use borax with success, but they require constant watching.

#### PANAMA HEALTH OFFICE.

[Dr. H. Goldthwaite, Health Officer.]

Malaria.—The following table shows the malaria cases reported for the six past fiscal years:

1920	128
1919	142
1918	
1917	
1916	
1915	582

The population has increased a few thousand in this period, so that the reduction in percentage of cases to total population would be even more marked than the above. Referring to the figures for the year 1920, 115 of these cases were reported during the last six months of 1919, and 13 only for the first six months of the calendar year 1920. The number of malaria cases chargeable to the city of Panama shows a small improvement over the report for 1919; this may be due, in part, to a more thorough cleaning of the ditches under the supervision of this office, but is most likely the result of the more intensive work done in the contiguous territory. It hardly seems possible that malaria could originate within the area sanitated by this office, as all ditches are not only kept clean, but are regularly swept thoroughly, and knowing that Anopheles will fly at least one mile, it is reasonable to presume that they exceed this limit—as

pointed out in remarks under Zone sanitation, the few cases charged to the city of Panama could easily be accounted for as being infected by mosquitoes coming from the known infected area beyond the 1-mile circle. To repeat what has been said in previous annual reports, the serious problem confronting us regarding malaria in Panama and vicinity, is that portion of the environment of the city known as Las Savanas. The eastern portion of the city, that which is generally known as the Calidonia district, can probably not be kept entirely free from malaria as long as the Savanas country remains unsanitated.

Vaccinations and smallpox.—For the year ending June 30, 1920, 16,256 vaccinations were made by this office. Until vaccination has been done thoroughly throughout the Republic, we will always have some cases of smallpox appearing in the city of Panama from time

to time.

Milk.—During the year practically all of the milk producers in the city and its environs formed a central milk distribution plant and it is now operating satisfactorily. All milk is now pasteurized and sold in sanitary milk bottles. The laboratory analyses of the Panama milk show a very marked improvement in the condition and grade of milk sold here.

Veterinary and meat inspection work.—The new slaughterhouse the city of Panama was put into operation May 29, 1920. All cattle and swine are now slaughtered in the new location. The fees for the quarantine inspection of cattle and swine for the year totaled \$4,424.90.

Sanitary inspection.—The usual routine work has been done by the inspectors attached to this office. The streets are in good condition. The night collection of garbage proceeds satisfactorily with practically no overtime charges for motor-car service—a condition much more

satisfactory than heretofore in vogue.

A new system of inspection of the sanitary districts was instituted during the year, which has worked most satisfactorily; it consists in making each man connected with the inspection work responsible for the work done by him; that is to say, the inspector is completely responsible for his district; the foreman is responsible to the inspector and the laborers are given tasks—so many city squares to work—they, in turn, being responsible to the foreman. This method has resulted in a much cleaner city, and at less expense.

Fines.—There were 1,147 fines imposed for violation of sanitary

regulations, and \$2,720 collected as a result thereof.

#### COLON-CRISTOBAL HEALTH OFFICE.

[Dr. J. L. Byrd, Health Officer.]

Milvria.—The number of cases reported during the year was 223, as against 177 last year. The increase in the number reported was due to conditions on Mindi Island during July, 1919, 117 cases being reported during that month. A large amount of ditching, draining, etc., has now been done on Mindi Island, eliminating many Anopheles breeding places. The fill between New Cristobal and Colon is almost completed, doing away with a swampy area that has caused the department a large yearly expense in labor and material in keeping down the breeding of flies and mosquitoes. A large number of ditches have been constructed in the Mount Hope area, which greatly reduces the Anopheles breeding area. This district has been

gone over thoroughly during the year, and is now in better shape than it has ever been, and should cause the department less expense in the future. Quinine tonic is offered daily to all men exposed to mosquitoes at Mount Hope, dry dock, and Mindi Island.

Tuberculosis.—There were 96 cases reported during the year, as

compared with 133 last year.

Since the strike in February and March, many families have been found destitute, and relief was furnished by charitable organizations. Several were assisted financially, as well as being furnished food and clothing. Many were sent to the hospital for treatment.

Whooping cough.—In October, 1919, school opened and children with whooping cough were found in school; 50 cases developed

during October and November.

Measles.—In January, 1920, there were no known cases of measles in the city, except one from the States. About the middle of the month measles developed among the school children, becoming an epidemic; there were 72 cases reported from that time to the end of March, and some were found in Colon which had not been reported or treated by a physician. Daily visits were made to Cristobal school and kindergarten, and the children in the grades where there had been cases of measles, were examined; those with temperatures of over 99.4 were kept home four days.

Infant welfare.—Several cases of malnutrition were reported by teachers, which were investigated and found in destitute circumstances. Milk and food were furnished for several weeks to the children, and the mothers were instructed in the preparation and selection of nourishing food. The cases were brought to the notice

of relief societies.

These cases brought attention to the need of a clinic for nonemployees—nearer than Santo Tomas Hospital in Panama—where minor dressings, medical treatment, and advice and instructions about the care of children could be obtained free. Two physicians in Colon have offered their services free of charge for such a clinic, and the Red Cross is arranging to ship a portable building to Colon in which to house the clinic. Especially are instructions needed for tubercular cases, and advice against the use of patent medicines.

Building operations.—There were 1,005 permits given to repair buildings; 36 permits to build, and 40 buildings condemned. About half of the new Panama Railroad stables on G and Sixteenth Streets have been completed and are occupied; the remaining half will be ready for occupancy within the next two months, which will allow the demolishing of the old stables on E Street, thereby doing away

with one of the worst fly and rat breeding places in Colon.

There has been quite a marked increase in the last month in the number of new buildings proposed, and with the opening of the new residential addition to Colon, between Seventh and Ninth and G and K Streets, building operations will still further increase. The old private stables on Ninth Street, about 10 in number, have been demolished and removed, and the larger part of the space occupied by them has been filled, doing away with another one of the most insanitary places in Colon. The wooden floor of the old Royal Mail dock was replaced by a new concrete floor, and a new roof was put on, making it practically a new rat-proof dock. Old Dock 11 has been partly demolished. This work should be completed as soon as possible, as it is one of the worst rat harborages in Cristobal.

Streets and alleys.—The cleaning of alleyways by the health office has been discontinued, and each property owner is now held responsible for the sanitary condition of the alleyway north of his property. For the first few months it was difficult to accustom these people to the change, although little opposition was encountered; conditions are gradually becoming better and the alleyways are now as clean and sanitary as can be expected considering the class of tenants occupying the buildings.

The concrete streets in Colon are in excellent condition, and are cleaned daily by the health office force. The concreting of G Street was completed during May, and the streets in the new fill back of that street were also completed. Broadway and Seventh Streets should be concreted, which would relieve the balance of the unconcreted streets from considerable traffic, thereby making it easier to

sanitate.

Garbage. On October 17, 1919, it was necessary to abolish the old dump back of Colon, on account of the New Cristobal fill. The long haul to the new dump west of Mount Hope has added considerable to the transportation expense. The old horses and mules of the supply department are practically worn out and can do only half service. This kind of transportation should be replaced by motor transportation which would make a big reduction in expense. It is expected to put motor trucks in operation as soon as the new incinerator is in operation.

Veterinary work and meat inspection.—The antemortem, postmortem, and quarantine inspection of animals arriving in port or slaughtered at Colon and Cristobal, has been carried out in the usual

thorough manner.

Several cases of anthrax were reported during the dry season, but with the present efficient force of veterinarians it is impossible for any infected meat to escape their notice. Splenic smears are taken from every animal slaughtered and immediately examined. The ear of each animal that dies in pasture is sent to the board of health laboratory for examination.

# QUARANTINE.

[Surgeon S. B. Grubbs. U. S. P. H. S., Chief Quarantine Officer.]

During the year inspection trips were made by the chief quarantine officer and by the quarantine officer, Cristobal-Colon, as shown below, in order to secure first hand information as to the sanitary condition of the various ports, and to relieve passengers, shipping, and The Panama Canal of as much quarantine delay as may be safely done away with. These inspections should be made about once in six months, and at such special times as may be necessary. It is expected that with the cooperation of our consular representatives, the international health board, and the shipping interests, great saving in time to ships and passengers will be effected.

As a result of a recent trip to the west coast of Central America, by the chief quarantine officer, certain modifications were made in our requirements at La Union, San Salvador, and Corinto, Nicaragua: modifications will also be made in the restrictions against Punta Arenas, Costa Rica, as soon as certain antimosquito work has been

accomplished.

After an inspection of the ports on the Atlantic side of Colombia and of the ports on the Magdalena River for a distance of 70 miles, the quarantine officer, Cristobal-Colon, recommended that inasmuch as no yellow fever had been known to originate in or near this area for over 12 years the six-day quarantine be lifted; this was approved

and put into effect June 25, 1920.

The fumigation of all vessels from the west coast of South America, which discharge their eargo at a Canal Zone port, has been continued; they are fumigated, empty, once every three months, for the destruction of rats. Both sulphur and cyanide are used, and the results have been very satisfactory. The steamship companies have given hearty cooperation and realize the value of this measure, not only as a protection to the public health, but as saving many claims for cargo damaged by rats.

On account of the unsatisfactory plague situation at Paita, Peru, the fumigation separately, on arrival at Cristobal, of all cargo lifted at this port, was instituted June 22, 1920, as an added precaution. Also, in following the routine fumigation every three months, especial

attention is given to vessels touching at this port.

Quarantine inspection of incoming ships from "clean" ports, up to 10 o'clock at night, which was instituted at Cristobal last year, was started at Balboa on February 16, 1920; up to June 30, 1920, but nine ships had availed themselves of this privilege at Balboa. During the year 203 ships were inspected at night at Cristobal.

## IMMIGRATION INSPECTION.

The quarantine service is charged with the enforcement of the immigration laws of the Canal Zone and of the Republic of Panama, aided in certain specific instances (American seamen and Chinese) by the customs bureau. The quarantine medical officer in the United States simply certifies as to the physical and mental state of the immigrant, while here his financial condition and general desirability must also be decided by our physician.

While immigration, especially of the laboring class, has greatly decreased in recent years owing to the completion of the canal, the opening of the canal and the consequent increasing number of vessels using it have brought additional duties to the quarantine officers in the handling of the many deserters who are a natural result of the

Isthmus, being the first stop in a long voyage.

On the arrival of a vessel the passenger list is examined, and those who state that their coming to the Isthmus is merely one part of their journey, as well as those who signify that their wish is to make this place their home, are questioned as to their financial standing and then subjected to a medical examination, more or less elaborate according

to circumstances.

The law requires all intending to become residents to be vaccinated; this is done if it has not already been successfully performed at the port of embarkation or en route. The passenger is rapidly scrutinized for any gross physical defects, examined particularly for trachoma, favus, and syphilis, as well as the infectious diseases, and is asked a sufficient number of questions to form some judgment as to his mental condition. Those about whom any suspicion exists are detained and subjected to a more complete examination at the quarantine station. Those found deficient are refused admission and deported by order of the quarantine officer.

It is hoped that a change will be made regarding the decision by the United States immigration authorities refusing entry to certain sailors previously removed from United States vessels at the canal for medical treatment, when these sailors are aliens, notwithstanding their having been signed on at a United States port.

# EXPENSES.

The total maintenance and operating expenses of the department, and credits received, have been as follows:

	1920				1919	
	Total expenses.	Credits.1	Net expenses.	Total expenses.	Credits.	Net expenses.
Administration . Division of hospitals and charities	\$22, 281. 37 920, 613. 77 443, 760. 49 90, 375. 39	\$469,000.00 100,090.09 42,000.00	\$22, 281. 37 451, 613. 77 313, 760. 49 48, 375. 39	\$20,516.68 776,762.88 402,391.62 65,896.04	\$6.00 412,981.95 128,374.25 49,744.39	\$20, 510, 68 363, 780, 93 274, 017, 37 16, 151, 65
Total	1, 477, 031. 02	641,000.00	836, 031. 02	1,265,567.22	591, 106. 59	674, 460. 63

<sup>1</sup> Approximately.

Owing to the constantly increasing cost of labor, materials, and supplies, and the failure of Congress to appropriate more than \$850,000, it has been necessary to increase the hospital charges, to make a flat charge against the Panama Railroad for treatment of its employees, and to greatly reduce our sanitary force, in order to keep within our appropriation.

Respectfully submitted.

H. C. Fisher, Chief Health Officer.

Brig. Gen. Chester Harding, United States Army, Governor, The Panama Canal, Balboa Heights, Canal Zone.

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TABLE I.—DISCHARGES, DEATHS, AND NONEFFECTIVE RATES FOR EMPLOYEES.

(The figures for 1918-19 do not agree with those shown in the report for that fiscal year, but have been changed to the same basis as those for 1919-20.)

### ABSOLUTE NUMBERS.

	Average	Disch pita	arges fro ls and de	m hos-		Deaths.	•	Noneffective from sickness.				
Color.	number of em- ployees.	Total.	Dis- ease.	External causes.	Total.	Dis- ease.	Exter- nal causes.	Days treated.	Con- stantly non- effective.			
Year 1919–20: White Colored	4,447 17,269	1, 439 3, 462	1,277 2,903	162 559	19 187	15 161	4 26	29, 398 88, 298	80.54 241.91			
Total	21,716	4,901	4, 180	721	206	176	30	117,696	322.45			
Year 1918-19: WhiteColored	3,738 16,434	1,161 3,596	1,068 3,049	93 547	10 160	9 144	1 16	27,413 96,919	75. 10 265. 53			
Total	20, 172	4,757	4, 117	640	170	153	17	124,332	340.34			
		PROPO	RTION	ATE N	UMBEF	RS.	1					
Year 1919-20: White Colored	4,447 17,269	323.59 200.47	287. 16 168. 10	36, 43 32, 37	4. 27 10. 83	3.37 9.32	.90 1.51		18. 11 14. 01			
Total	21,716	225, 69	192, 48	33. 20	9.49	8.10	1.38		14.85			
Year 1918–19: White Colored	3,738 16,434	310.59 218.81	285.71 185.55	24.88 33.28	2.67 9.74	2. 41 8. 76	.27		20. 09 16. 16			
Total	20, 172	235.82	204.09	31.73	8.43	7.58	.84		16.87			

### TABLE I-A .- DEATHS IN THE CANAL ZONE AND THE CITIES OF PANAMA AND COLON.

	Average popula-		Deaths.		Annual	average p	er 1,000.
	popula- tion.	Total.	Disease.	External causes.	Total.	Disease.	External causes.
Year 1919-20;							
Panama	61,369	1,278	1,234	44	20,82	20, 11	0.72
Colon	26,078	567	527	40	21.74	20, 21	1.53
Canal Zone	30,954	253	219	34	8.17	7.08	1.10
Total	118, 401	2,098	1,980	118	17.72	16.72	1.00
Year 1918-19:							
Panama	61,369	1,377	1,341	36	22, 43	21.85	. 59
Colon	26,078	636	607	29	24.37	23. 28	1.12
Canal Zone	21,707	218	204	14	10.04	9.40	.64
Total	109, 154	2, 231	2, 153	79	20.44	19.72	.72

Table II.—Causes of Deaths of Infants, by Sex, Color, Age, and Place of Residence.

	Total.	07700000H00540004HH	прано		27 65 10 4	
епсе.	Canal Zone.	ннн			LQ .	
Place of rosidence.	Co- lon.	H HH H 10000H			12 12 1	
P <b>la</b> ce	Pan-		V-1-4	4	248 10 3	
	11-12		* * * * * * * * * * * * * * * * * * *		∞⊶	
	10-11	7 1 1 2	1		1 6	
	9-10				H40H	
	S.				8∞4	
	8-1-		1	ı	460	
ths).	6-7			1	∞	
Age (by months)	5-6		1		H4 .	
Age (b)	4-5		1	2	1100	
,	3.4	i i i i i i i i i i i i i i i i i i i	П	1	153	
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	1-2	H	1 1		H 4	
	Plus 1 week minus 1 month.	1			7	
	Minus 1 week.	2 2 2			- co	1
or.	Black.	H00000H000400000H	P=6:0=	A A 4	25 60 7	-
Color	White, Black.	2 1 1 1 2	63	П	C1000H	1
.;	Fe- male.	21 II II WHITE CO II	2110	3 1	10 27 5 4	
Sex.	Male.	1886888888	1 22 1		38 5	
	Cause of death.	General diseases:  Malaria fever Malaria fever Moophing cough Diptitheria and croup. Influenza. Dysentery Existence Dysertery Existence Dysertery Syphilis, netwoltary Syphilis, netwoltary Syphilis, period not stated Soury Diseases of the nervous system and or	the organs or special sense: Simple meningtis. Cerebrospinal fever. Pneumococeus meningtis. Convulsions. Disease of the ears. Disease of the fear.	Perfearditis. Malignant endocarditis. Phlebitis. Disease of the lymptatic system. Diseases of the respiratory system.	Acute bronchitis Broncho-pneumonia Pneumonia (unqualified) Lobar pneumonia Other diseases of the respiratory	system Abscess of lungs

140 140 160 1	11 4 4	25 20 20 20 20 20 20 20 20 20 20 20 20 20	e tee	573	261 834
100	11 11	9 22 7	-	92	38
29 1	4- 4	441 19 20 30	1	137	48
7 111	ro ss o	25 23 25 25 25 25 25 25 25 25 25 25 25 25 25	9 1	360	175
2	2	10		31	31
1 9 6 7	1 2 2	5	-	31	31
21		e		39	39
2 1 1 1		4		45	45
10	П	9	2	35	35
15	2     =	6		37	37
9	2 = =	1 1 4		31	31
17	2	5		38	38
1 10	1	1 6		30	30
11 12		2		4	44
1 13	8	1 12		41	41
9	4	41- 4 10	1	37	37
H-4	12	17 52 3 32	-	134	134
H03800H	11 4 02	21 50 64 35	- 9-	521	750
2 11 1	4	He	-	22 82	26   28
72	111	23 1 27 18 18	- e	241	358
1727.41	6 1 13 13	16 36 37 19	4-1	332	476
Diseases of the digestive system: Uler of the stomach. Acute gastritis. Acute mulgestion. Diarrhea and enteritis. Colitis. Intestinal obstruction. Nonveneral diseases of the genito- urnary system.	Acute nephritis Other diseases of the kidneys. Pyelo nephrosis. Malformations. Congenital malformations. Diseases of early inflancy. Congenital debility inferens, and	Premature birth Atrophy of infants Mahutrition Other causes peculiar to early infancy Affections produced by external causes:	Trannatism by fall lifedined diseases: Cause not specified or ill-defined lifections of undetermined origin.	Total. Stillbirths	Grand total.

## TABLE III.—DEATHS BY NATIONALITY OR NATIVITY.

Country.	Employees.	Non- em- plo, ees.	Total,
Africa Algeria Austria Antiqua	2	1 1 1 15	1 1 1 17
Bahamas Barbados Brazil British Guiana	39	303 1 6	3 342 1 7
Canada Chilo China Colombia	1 1 11	1 3 41 94	1 3 42 105
Costa Rica. Cuba. Curacao.	1	8 1 1	9
Demerara. Denmark Dominica. Ecuador	i 1	6 1 3 13	1 6 2 3 14
England Finlaud Fortune Island France.	1 2	5 1 4 11	5 1 5 13 2 2 6
Germany Grand Caymon Island Greece. Grenada.	1 4	2 2 5 26	30
Guadeloupe Guatemala Haitl Holland	7 1 2	11	18 1 2
Honduras Hungary India Ireland	1	3 5 1	1 2 1 3 1 5
Italy Jamaica Japan Martinque	1 61 5	10 486 4 36	11 547 4 41
Mexico : Montserrat	2	5 7 6 3	7 7 6
Nicaragua Norway Panama Peru	1 1 27 2	583 20	4 1 610 22
Porto Rico. Roumania. Scotland. Spain.	2	5 1 2 34	22 5 1 2 36
St. Andrews.         St. Lucia         St. Thomas.         St. Vincent.	1 6 3 2	32 6 7	1 38 9 9 2 18
Sweden. Trinidad United States. Venezuela	3 11 1	2 15 42 7	2 18 53 8
Total	206	1,892	2,098

Table IV.—Deaths of Employees, by Color, Age, and Length of Residence, on Isthmus.

	To- tal.	23 2 2 2 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3	HH10 101010	HH6 88 H	10 2 11 11 11 11 11 11 11 11 11 11 11 11 1
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ears).		HH : : # : :			2
(in y	0-15	H4 H0 12 HH	2   1   1	1 2 1 1	°
Length of residence on Isthmus (in years)	8-10 10-15 Over	1 1 1 2 1			
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nce o	2-9	(9)			
eside	9-2				
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ength	3-4				
Ä	2-3	:::::::	:::: -::		
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	36-75	- ! ! ! ! ! ! ! !			
	9-65		111-	51	69
	51-55 56-65 66-75		-	es .	
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	Causo of death.	Malaria fover Malaria fover Influenza. Pysemia Septisemia Septisemia Tubereutosis of the lungs. Acute miliary tubereutosis Abdominal tubereutosis. Potts' disease	Disseminated tubreulosis. Syphilis tertiary. Syphilis period not stated. Caneer of the stomach. Caneer of organs not speed. Purpura hermortiagies. Purpura hermortiagies. Diseases of the nerv outsystem and of the organs of	Special series: Simple meningitis. Prounococus meningitis. Prounococus meningitis. Cerebral hæmorrhagea (apoplexy). Solicing of the brain. Solicing of the brain.	Disasses of the circulatory system: Acute endocarditis. Malignant endocarditis. Organic diseases of the heart. Aneurysun Arterio-selerosis. Embolism and thrombosis.

Table IV.—Deaths of Employees, by Color, Age, and Length of Residence, on Isthmus-Continued.

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	Cause of death.	Jiseases of the respirato system: Acute broachtis Broacho-pneumonia Preumonia (unqualified Lobar pueumonia Gangrene of the lungs)iseases of the digesti	U Joer of the stomach Acute gastritis	tions.  Inguinal hemia. Other hemias. Intestinal obstruction. Duodenal ulcer. Cirrhosis of the liver. Simple peritouits.	genito-urinary system Acute nephritis Chronic nephritis Discases of the bladder. Discases of the skin and of t	Acute abseess Phlegmon and cellulitis Diseases of the bones and organis of locomotion:	Ill-defined diseases: Ill-defined or not specified
	Color. Age (in years). Length of residence on Isthmus (in years).	Color. Age (in years). $ $ W. B. $15-20[21-25]26-30[31-35]36-40[41-45]46-50[51-55]56-65[66-75]                                    $	Color.  W. B. 15-20 21-25 26-30 31-35 36-40 41-45 46-50 51-55 56-65 66-75 known. 1yr. 1yr. 2 1 2 1 2 1 2 1 2 1 1 1 1 1 1 1 1 1 1	Color.       Age (in years).       Age (in years).       Length of residence on Isthmus (in years).       Transmission of the property of t	W. B. 15-20 21-25 20-30 31-35 36+40 41-45 46-50 51-55 56-65 66-75 known. 1yr. der 1-2 2-3 3-4 4-5 5-6 6-7 7-8 8-10 10-15 15 15 14 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Name   15-20 21-25 26-30 31-35 36-40   41-45   46-50   31-55 36-65   67-75   Mover   1 yr.   1	No   B   15-20   21-25   26-30   31-35   36-16   10   10   10   10   10   10   10

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Affections produced by external causes: Suicide by firearms. Burns.	E E	7 <u>6</u> 1	ER:	ı ö	

TABLE V.—STATISTICS RE AMERICAN EMPLOYEES AND THEIR FAMILIES.

	Annual average per 1,000.
White employees from the United States: Disease. External causes.	2.06
Total	2. 83
White women and children from the United States: Disease. External causes.	3.32
Total	3.71
White employees and their families from the United States: Disease External causes.	2.78
Total	3.33

TABLE VI.—CONSOLIDATED HOSPITAL REPORT.
[A, White Americans. F, White foreigners. B, Black.]

	Remain	ing July	1, 1919.	A	dmitted	1.		Died.	
	Α.	F.	В.	A.	F.	В.	A.	F.	В.
Ancon Hospital: EmployeesArmy and Navy	31 56	12	170	974 760	175	3,163	8 5	3	127
Panama pay patients Other pay patients Charity patients	39 9	33	76 16	1,540 312	1,097 63	1,836 340	18 3	26 3	147 20
Total	135	48	262	3,586	1,336	5,347	34	32	295
Corozal Hospital: Employees Army and Navy.	1	1	19	2 19	1	13			
Panama pay patients Other pay patients Charity patients	3	53 4 10	216 12 71	5 2	19 4 3	34 16 13		5 1 1	15 2 7
Total	4	68	318	28	27	76		7	24
Grand total	139	116	580	3,614	1,363	5, 423	34	39	319
Corozal Farm (cripples) employees. Chronie ward: Charity pa-		9	45		2	11			
tients  Colon Hospital: Employees Army and Navv. Panama pay patients. Other pay patients. Charity patients.	6 6 11 4	1 2 5	15	305 88 5 427 62	48 10 21 331 8	740 96 460 55	2 4 8 1	1 3 14	34 17 27
Total	27	8	24	887	418	1,351	15	18	78
Palo Seco Leper Asylum: Panama pay patients Charity patients		2	41 31		2 1	3 7			2
Total		2	72		3	10			3
Grand total: Employees Army and Navy. Panama pay patients Other pay patients Charity patients	3	23 2 55 42 13	249 258 96 147	1,281 867 5 1,972 376	226 10 43 1,432 75	3,927 141 2,312 419	10 9 26 4	3 1 8 41 4	161 35 176 28
Total	166	135	750	4,501	1,786	6,799	49	57	400

TABLE VI.—CONSOLIDATED HOSPITAL REPORT—Continued.

	D	ischarge	d.	· T	ransferre	d.	Remain	ing June	30, 1920.
	A.	F.	в.	A.	F.	В,	Α.	F.	В.
Ancon Hospital: Employees. Army and Navy	969 771	172	2,993	4 10	4	50	24 30	8	163
Panama pav patients Other pay patients Charity patients	1,499 315	1, 0.8 59	1,679 290	5	1 1 2	7 30 33	57 3	45 2	56 13
Total	3,554	1,289	4,962	19	8	120	114	55	232
Corozal Hospital: Employees. Army and Navy. Panama pay patients. Other pay patients Charity patients.	3 17 3 2	1 6 3 3	18 48 10 24		1	5	2 3 2	1 61 4 8	182 182 16 51
Total	25	13	100		1	7	7	74	263
Grand total	3,579	1,302	5,062	19	9	127	121	129	495
Corozal Farm (cripples) employees. Chronic ward: Charity patients		7	29			4		4	27
Colon Hospital: Employees. Army and Navy. Panama pay patients. Other pay patients Charity patients	247 57 1 325 59	32 6 2 187 8	350 20 290 44	58 32 4 95 4	17 5 16 126	355 59 134 10	4 1 10 2	9	16 1 17 1
Total	689	235	704	193	164	558	17	9	35
Palo Seco Leper Asylum: Panama pay patients Charity patients			5 5					4 1	37 32
Total			10					5	69
Grand total: Employees. Army and Navy. Panama pay patients. Other pay patients.	1,219 845 1	212 6 8 1,248	3,390 73 1,979	62 42 4 100	21 5 17 127	405 71 164	28 33 3 69	13 65 58	220 220 89
Charity patients	1,827 376	70	366	4	3	49	5	11	123
Total	4,268	1,544	5,808	212	173	689	138	147	652

TABLE VII.—CONSOLIDATED REPORT OF EMPLOYEES TREATED IN QUARTERS.

Station.	Rema	ining , 1919.	Adm	itted.	Di	ed.	Disch	arged.	Trans	ferred.		ining 0, 1920.
	White.	Col- ored.	White.	Col- ored.	White.	Col- ored.	White.	Col- ored.	White.	Col- ored.	White.	Ccl- ored.
Ancon Balboa Pedro Miguel Gatun Cristobal	. 2 2 2 2	8 1 3 3 32	1,924 2,364 204 192 1,119	1,732 22 209 99 1,675			1,8°0 2,358 199 184 1,093	1,664 23 202 92 1,648	32 5 10 22	63 7 10 42	6 9 2	13 3
. Total	13	47	5,803	3,737			5,724	3,629	69	122	23	33

TABLE VII-A.—CONSOLIDATED REPORT OF DAYS LOST IN QUARTERS.

Station.	White.	Colored.	Total.
Ancon. Balboa. Pedro Miguel. Gatun Colon.	4,564	5,366	9,930
	5,158	99	5,257
	595	522	1,117
	585	418	1,003
	3,219	11,688	14,907

## TABLE VIII.—CONSOLIDATED HOSPITAL AND EMPLOYEES TREATED IN QUARTERS REPORT.

	Rema July 1	ining , 1919.	Adm	itted.	Di	ed.	Disch	arged.	Transi	ferred.	Rema June 30	
	White.	Col- ored.	White.	Col- ored.	White.	Col- ored.	White.	Col- ored.	White.	Col- ored.	White.	Col- ored.
HospitalsQuarters	301 13	750 47	6,287 5,803	6, 799 3, 737	106	400	5,812 5,724	5,808 3,629	3S5 69	689 122	285 23	652 33
Total	314	797	12,090	10,536	106	400	11,536	9,437	454	811	308	685

	White.	Colored.	Total.
Total admissions to hospitals, excluding Corozal farm and chronic ward  Total admissions of employees to quarters	6, 285	6,784	13, 069
	5, 803	3,737	9, 540
Total admissions to hospitals and quarters.  Less number of patients transferred from quarters to hospitals and between hospitals, whose admissions are duplicated in above figures.	12,088	10, 521	22,609
	385	685	1,070
Net admissions to hospitals and quarters	11,703	9,836	21,539
Total admissions of employees to quarters. Total admissions of employees to hospitals.	5,803	3,737	9,540
	1,507	3,927	5,434
Total admissions of employees.	7,310	7,664	14,974
Less number transferred between hospitals, etc.	152	523	675
Net admissions of employees to hospitals and quarters	7,158	7, 141	14,299
Annual average per 1,000 admissions of employees	1,609.62	413, 52	658.45

Table VIII-A.—Consolidated Dispensary Report of all Cases Treated but not Excused.

	]	Employe	es.	No	nemploy	ees.		Total.	
Station.	White.	Col- ored.	Total.	White.	Col- ored.	Total.	White.	Col- ored.	Total.
Ancon. Balboa. Pedro Miguel. Gatun. Cristobal	14, 246 52, 187 11, 549 4, 070 12, 901 94, 953	59,272 28,409 31,181 21,404 50,861 191,127	73,518 80,596 42,730 25,474 63,762 286,080	12,008 39,186 18,434 6,522 14,153 90,303	19, 211 13, 864 26, 734 10, 089 21, 088 90, 986	31,219 53,050 45,168 16,611 35,241 181,289	26, 254 91, 373 29, 983 10, 592 27, 054 185, 256	78, 483 42,273 57,915 31,493 71,949 282,113	104,737 133,646 87,898 42,085 99,003 467,369

Table IX.—Average Number of Employees Constantly Sick in Hospitals and Quarters.

	White.	Colored.	Total.
HOSPITALS.			
Ancon Hospital. Colon Hospital	37.51 4.35	179. 45 12. 89	216, 96 17, 24
Total.	41.86	192.34	234. 20
QUARTERS.			
Ancon. Balboa. Pedro Miguel. Gatun.	12.50 14.13 1.63 1.60	14.70 .27 1.43 1.15	27, 20 14, 40 3, 06 2, 75
Cristobal	8.82	32.02	40.84
Total	38. 68	49.57	88. 25

### TABLE IX-A.—AVERAGE NUMBER OF EMPLOYEES CONSTANTLY SICK.

•	White.	Colored.	Total.
Hospitals. Quarters.	41. S6 38. 68	192, 34 49, 57	234, 20 88, 25
Total	80.54	241, 91	322, 45

## TABLE IX-B.—AVERAGE NUMBER OF EMPLOYEES CONSTANTLY SICK PER 1,000.

	White.	Colored.	Total.
HospitalsQuarters	9. 41 8. 70	11. 14 2. 88	10.78 4.06
Total	18. 11	14. 02	14.84

# Table · X.—Average Number of Days' Stay in Hospitals or Quarters for each Admission of Sick Employee.

	White.	Colored.	Total.
HOSPITALS. Ancon Hospital. Colon Hospital	12. 17	18.89	17. 15
	7. 19	5.88	5. 73
QUARTERS. Dispensary carried by— Ancon. Balboa Pedro Miguel Gatum Colon.	2. 45	3. 34	2. 76
	2. 17	2. 38	2. 20
	2. 86	3. 42	3. 05
	2. 91	4. 06	3. 41
	2. 92	6. 68	5. 20

## TABLE XI.—SURGICAL OPERATIONS PERFORMED.

	Ancon I	Iospital.	Colon E	Iospital.	То	tal.
	Number.	Died.	Number.	Died.	Number.	Died.
Imputations.			1			
Λrm			1	1	ļ ,	• • • • • • • • • • • • • • • • • • • •
Forearm			2 2 3		2	
			- 3		3	
Foot	1				1 7	
Thigh	4	1	3 4	3		
l eg. Foot. Thigh Di tts multiple. Deration on bones. Ostioctomy	17		4		21	
	$\frac{4}{2}$	1	4	4	6	
Craniectomy decompressive. Craniectomy, exploratory. Resection of hip.			2	2	2	
Resection of hip	1				1	
Resection of elbow	1				1	
Wiring of fractures, simple	14		2		14 2	
Wiring of fractures, compound Plating of fractures, simple. Bone transplantation.	3		2		2 3	
Rope transplactet on	3				3 3	
Excision of maxilla	ĭ				ĭ	
Lage plate, tibia	$\frac{1}{2}$				2	
Lane plate, humerus			`1		1	
Lane plate, radius	1				1	
Bunion excision, double	2		1		3 3	
Excision of maxilla.  Lane plate, tubia.  Lane plate, tubia.  Lane plate radius.  Bunion excision, double.  Refuction of fractures.	3				9	
Adenectomy. Cervical	17				17	
Avillary	4				4	
Inquinal, single	232		5		237	
Axillary Inguinal, single Inguinal, double	43				43	
Fe noral	20				20	
Herniotomy. Inguinal, single Inguinal, double	111		34		145	
Inquiral double	36		3		39	
Combined			ĩ		1	
Femoral.  Diaphragmatic.  Ventral.	3		1		4	
Diaphragmatic	1				1	
Ventral	27		$\frac{2}{2}$		29	
Strangulated	5	-				1
Nephrectomy Nephrectomy Ureterotomy Cystotomy Urethretomy, internal Urethrotomy, external	3				3	
Nephrotomy	3		1	1	4	
Ureterotomy	1				1	
Cystotomy	5				5	
Urethretomy, internal	12		3		12 18	
Utethrotomy, external	15 4	1	0		4	
10364(0000111)	21		1		22	
Hydrocele single, radical cure	32		5		37	
Hydrocele, double, radical cure	6				6	
Varicocele, radical cure. Hy drozele, sintle, radical cure. Hydrocele, double, radical cure. Orchi lectomy. Epididymotomy Vasactomy. Amputation of scrotum. Amputation of penis Curetage uteri.	7				7	
Epididymotomy	55		1		56	
Vasectomy	2 15				15	
Amputation of penis	2				2	
Curetage uteri	236		8		244	
Cautery of chancroids	45				45	
Amputation of penis Curetage uteri. Cautery of chancroids. Circumcision. Peringenlasty	228				225	
Perineoplasty Tracholorrhaphy Vaginal punctures.	24		1 2		25 12	
Yaganalaunaturas	10				5	
Obstetrical.	,					
Accouchement force	4		6	2	10	
Accouchement force	5	2			5	
High forceps.	1		2		3	
Low forceps	6 4		6 4		12	
Perincerthanhy	25		4		25	
Version. Perineorrhaphy. Abdominal pregnancy.	1				1	
I DOTAX.	1					
Thoracotomy	6		1		7	
Excision of preast	1		1		2	
Excision of breast and axilla	4				4	
Rectum.	110		4		116	
Hemorrhoids, radical cure	112		1		110	
Fistula in anus, excision of						

TABLE XI.—SURGICAL OPERATIONS PERFORMED—Continued.

General.  Thyroidectomy. Aneurismorrhaphy. Nerve stretching. Varioose veins, excasion of. Tenorrhaphy. Excision of surface neoplasms. Stab wounds of soft parts, operation for. Extensive injuries to soft parts, operation for Plastic operation for congenital defects. Plastic operation for effects of disease. Skin graft. Salvarsan injections. Arsphenamine, intranenous. Cauterizations. Laparotomy. For ceneral peritonitis. Exploratory. Intestinal obstruction Partial gastrectomy Entero-enterostomy. Gastro enteros'omy Enterorhaphy. Enterorhaphy. Enterorhaphy. Enterorhaphy. Enterorhaphy. Enterorhaphy. Cholecystotomy. Appendectomy with local peritonitis. Appendectomy with general peritonitis. Appendectomy with general peritonitis. Appendectomy with general peritonitis. Appendectomy with general peritonitis. Appendectomy. Cholecystostomy. Cholecystostomy. Cholecystostomy. Cholecystostomy. Suppravaginal hysterectomy. Hysteromyomectomy. Myomectomy. Salpingo-oophorectomy. Oophorectomy. Oophorectomy. Suspensio-uteri. Henatoperitoneum.	8 8 1 2 2 13 1 7 7 3 2 2 9 9 2 , 3 8 8 1 2 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1	1 1 6 3 3 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	i	Number.  9 1 2 15 2 8 1 3 5 9 10 3 229 2,3×8 124 1 4 229 3 1 1 4	Died.
Thyroidectomy. Aneurismorrhaphy. Nerve stretching. Varicose veins, excusion of. Tenorrhaphy. Excision of surface neoplasms. Stab wounds of soft parts, operation for. Extensive injuries to soft parts, operation for effects of disease. Plustic operation for effects of disease. Skin graft. Salvarsan injections. Arsphenamine, intranenous. Cauterizations. Laparotomy. For cunteral peritonitis. Exploratory. Intestinal obstruction Partial gastrectomy Entero-enterostomy. Gastro enteros'omy Enter-ectomy Appen ectomy. Appen ectomy Appen ectomy Appen dectomy with local peritonitis. Appendectomy with general peritonitis. Abscess of liver. Cholecystolomy Cholecystostomy. Choledystoctomy. Choledystoctomy. Choledystoctomy. Pan-hysterectomy. Supravaginal hysterectomy. Myomectomy. Salpuractomy, single. Salpingo-oophorectomy. Ooyanan cystectomy. Ooyanan cystectomy. Plastic operation for chronic peritonitis.	1 2 1 3 1 7 7 3 4 4 4 3 7 7 3 2 2 9 2 2 3 8 8 8 1 2 4 4 4 1 1 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	1 1 1	2 1 1 1 1 6 6 3 3	i	1 15 2 8 8 1 1 3 5 9 10 3 229 2,3*8 124 1 4 29 3 3 1 1	
Aneurismorrhaphy. Nerve stretching. Varicose veins, excision of. Tenorrhaphy. E veision of surface neoplasms. Stab wounds of soft parts, operation for. Extensive injuries to soft parts, operation for. Extensive injuries to soft parts, operation for Plastic operation for congenital defects. Plastic operations for severe injuries Plastic operations for severe injuries Plastic operation for effects of disease. Skin graft. Salvarsan injections. Arsphenamine, intranenous. Cauterizations. Laparotomy. For general peritonitis. For tuberculous peritonitis. Exploratory. Intestinal obstruction Partial gastrectomy Gastro enteros'omy Entero-enterostomy Gastro enteros'omy Enteror haphy. Entero-enterostomy Appendectomy with local peritonitis. Appendectomy with general peritonitis. Appendectomy with general peritonitis. Appendectomy with general peritonitis. Abscess of liver. Cholecystostomy. Cholecystostomy. Cholecystostomy Fan-hysterectomy Myomectomy Suppravaginal hysterectomy Myomectomy Salpurgectomy, single Salpurgectomy, single Salpurgectomy, soubble Salpingo-opphorectomy. Ovarian cystectomy Plastic operation for chronic peritonitis.	1 2 1 3 1 7 7 3 4 4 4 3 7 7 3 2 2 9 2 2 3 8 8 8 1 2 4 4 4 1 1 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	1 1 1	2 1 1 1 1 6 6 3 3	i	1 2 15 2 8 1 3 5 9 10 3 229 2,3%8 124 1 4 29 3 3 1 1	
Nerve stretching. Varicose veins, excision of Tenorrhaphy. E veision of surface neoplasms. Stab wounds of soft parts, operation for. Plastic operation for congenital defects. Plastic operations for severe injuries. Plastic operations for severe injuries. Salvarsan injections. Arsphenamine, intranenous. Cauterizations. Laparotomy. For general peritonitis. Exploratory. Intestinal obstruction Partial gastrectomy. Enter-onterostomy. Gastro enteros'omy. Enter-onhaphy. Enter-onhaphy. Enter-onhaphy. Appendectomy with local peritonitis. Appendectomy with local peritonitis. Appendectomy with general peritonitis. Appendectomy with general peritonitis. Appendectomy with general peritonitis. Appendectomy. Cholecystostomy. Cholecystostomy. Cholecystostomy. Cholecystoctomy. Pan-hysterectomy. Suppravaginal hysterectomy. Myomectomy. Salpurgectomy, single. Salpinge-oophorectomy. Ovarian cystectomy. Ovarian cystectomy. Plastic operation for chronic peritonitis.	2 13 1 7 3 4 4 3 3 229 2,388 124 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1	2 15 2 8 1 3 3 5 9 10 3 229 2,388 124 14 299 3 1	
Tenorrhaphy. Excision of surface neoplasms. Stab wounds of soft parts, operation for. Extensive injuries to soft parts, operation for. Plastic operation for congenital defects. Plastic operations for severe injuries. Plastic operation for effects of disease. Skin graft. Salvarsan injections. Arsphenamine, intranenous. Cauterizations. Laparotomy. For tuberculous peritonitis. Exploratory. Intestinal obstruction Partial gastrectomy Entero-enterostomy Gastro enteros'omy Enterornhaphy. Enterornhaphy. Enterornhaphy. Enterocherostomy with local peritonitis. Appendectomy with local peritonitis. Appendectomy with general peritonitis. Appendectomy with general peritonitis. Appendectomy with local peritonitis. Appendectomy with general peritonitis. Appendectomy with general peritonitis. Abscess of liver. Cholecystostomy. Cholecystostomy. Cholecystostomy. Supravaginal hysterectomy. Hysteromyomectomy. Myomectomy. Salpurgectomy, single. Salpingectomy, obuble. Salpinge-oophorectomy. Ovarian cystectomy. Ovarian cystectomy. Plastic operation for chronic peritonitis.	13 1 7 3 4 3 7 3 229 2,388 124 1 3 25 3 1 1 4 4 1 1 1 1 156	1 1	2 1 1 1 1 1 6 6 3 3	1	15 28 11 3 5 9 10 3 229 2,388 124 29 3 3 1 1 4	
Tenorrhaphy. Excision of surface neoplasms. Stab wounds of soft parts, operation for. Extensive injuries to soft parts, operation for. Plastic operation for congenital defects. Plastic operations for severe injuries. Plastic operation for effects of disease. Skin graft. Salvarsan injections. Arsphenamine, intranenous. Cauterizations. Laparotomy. For tuberculous peritonitis. Exploratory. Intestinal obstruction Partial gastrectomy Entero-enterostomy Gastro enteros'omy Enterornhaphy. Enterornhaphy. Enterornhaphy. Enterocherostomy with local peritonitis. Appendectomy with local peritonitis. Appendectomy with general peritonitis. Appendectomy with general peritonitis. Appendectomy with local peritonitis. Appendectomy with general peritonitis. Appendectomy with general peritonitis. Abscess of liver. Cholecystostomy. Cholecystostomy. Cholecystostomy. Supravaginal hysterectomy. Hysteromyomectomy. Myomectomy. Salpurgectomy, single. Salpingectomy, obuble. Salpinge-oophorectomy. Ovarian cystectomy. Ovarian cystectomy. Plastic operation for chronic peritonitis.	1 7 3 4 3 3 7 3 229 2,388 124 1 3 25 3 1 1 4 4 1 156	1	1 1 6 3	1	2 8 1 1 3 5 9 10 0 3 229 2,3 8 124 229 3 1 1 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	
Excision of Surface neoplasms Stab wounds of soft parts, operation for. Extensive injuries to soft parts, operation for. Extensive injuries to soft parts, operation for. Plastic operation for congenital defects. Plastic operation for effects of disease. Skin graft. Salvarsan injections. Arsphenamine, intranenous. Cauterizations. Laparotomy. For general peritonitis. Exploratory. Intestinal obstruction Partial gastrectomy Entero-enterostomy Gastro enteros'omy Enteror haphy. Enteror haphy. Appen ectomy Appen ectomy Appen dectomy with local peritonitis. Abscess of liver. Cholecystolomy Cholecystostomy. Cholecystostomy. Cholecystostomy. Cholecystostomy. Cholecystostomy. Cholecystostomy Cholecystostomy Cholecystostomy Supravaginal hysterectomy Myomectomy Salpuractomy, single Salpingo-oophorectomy Ooyanan cystectomy Suspensio-uteri. Henatoperitoneum Plastic operation for chronic peritonitis.	3 4 3 7 3 229 2,388 124 1 3 25 3 1 1 4	1	1 1 6 3	1	3 5 9 10 3 229 2,3*8 124 29 3 3 1 1 4	
Stab wounds of soft parts, operation for.  Extensive injuries to soft parts, operation for.  Plast ic operation for congenital defects. Plastic operations for severe injuries. Plastic operation for effects of disease. Skin graft. Salvarsan injections. Arsphenamine, intranenous. Cauterizations. Laparotomy. For general peritonitis. Exploratory. Intestinal obstruction Partial gastrectomy Entero-enterostomy Gastro enteros'omy Enteror haphly. Enteror haphly. Enteror haphly. Appendectomy with local peritonitis. Appendectomy with general reritonitis. Abscess of liver. Cholecystostomy. Cholecystostomy. Cholecystostomy. Cholecystostomy Pan-hysterectomy. Supravaginal hysterectomy. Hysteromyomectomy Myomectomy. Salpuracctomy, single. Salpingectomy, solvile. Salpinge-oophorectomy. Ovarian cystectomy. Pustic operation for chronic peritonitis.	3 7 3 229 2,388 124 1 3 25 3 1 1 1 4	1	1 6 3	1	3 5 9 10 3 229 2,388 124 29 3 3 1 1	
Extensive injuries to soft parts, operation for	3 7 3 229 2,388 124 1 3 25 3 1 1 1 4	1	1 6 3	1	3 5 9 10 3 229 2,3 \( \) 8 124 1 4 29 3 3 1 1	
tion for  Plastic operation for congenital defects.  Plastic operations for severe injuries  Plastic operation for effects of disease  Skin graft  Salvarsan injections  Arsphenamine, intranenous  Cauterizations  Laparotomy  For general peritonitis  For tuberculous peritonitis  Exploratory  Intestinal obstruction  Partial gastrectomy  Gastro enteros' omy  Entero-enterostomy  Gastro enteros' omy  Enterectomy  Appendectomy with local peritonitis  Appendectomy with general peritonitis  Appendectomy with general peritonitis  Appendectomy  Cholecystostomy  Cholecystostomy  Choledacho omy  Choledacho omy  Choledacho omy  Choledsystectomy  Balpingectomy  Salpuractomy  Suspensio-uteri  Henatoperitoneum  Plastic operation for chronic peritonitis	3 7 3 229 2,388 124 1 3 25 3 1 1 1 4	1	1 4	1	5 9 10 3 2299 2,3×8 124 1 4 29 3 3 1 1	
Plastic operation for congenital defects. Plastic operations for severe injuries. Plastic operation for effects of disease. Skin graft. Salvarsan injections. Arsphenamine, intranenous Cauterizations. Lapazotomy. For general peritonitis. Exploratory. Intestinal obstruction Partial gastrectomy Entero-enterostomy Gastro enteros'omy Entero-enterostomy Appendectomy with local peritonitis. Appendectomy with local peritonitis. Appendectomy with general peritonitis. Abscess of liver. Cholecystolomy Cholecystostomy Cholecystostomy Cholecystostomy Pan-hysterectomy Myomectomy Myomectomy Salpuractomy, Supravaginal hysterectomy Salpuractomy, Gouble. Salpinge-oophorectomy Ovarian cystectomy Suspensio-uteri. Henatoperitoneum Plastic operation for chronic peritonitis.	3 7 3 229 2,388 124 1 3 25 3 1 1 1 4	1	1 4	1	5 9 10 3 2299 2,3×8 124 1 4 29 3 3 1 1	
Plastic operations for severe injuries. Plastic operation for effects of disease. Skin graft. Salvarsan injections. Arsphenamine, intranenous. Cauterizations. Laparotomy. For teneral peritonitis. For tuberculous peritonitis. Exploratory. Intestinal obstruction. Partial gastrectomy Entero-enterostomy Gastro enteros'omy Enteror haphy. Enteror haphy. Enteror haphy. Appendectomy with local peritonitis. Appendectomy with general peritonitis. Absess of liver. Cholecystolomy Cholecystostomy. Cholecystostomy. Cholecystostomy. Cholecystoctomy Hysteromyomectomy Myomectomy Myomectomy Salpuractomy, single Salpuractomy, single Salpuractomy, double. Salpingo-oophorectomy Ooyanan cystectomy Ususpensio-uteri. Henatoperitoneum Plastic operation for chronic peritonitis.	3 7 3 229 2,388 124 1 3 25 3 1 1 1 4	1	1 4	1	9 10 3 229 2,388 124 1 4 29 3 1 1	
Plastic operation for effects of disease Skin graft Salvarsan injections Arsphenamine, intranenous Cauterizations Laparotomy For general peritonitis For tuberculous peritonitis Exploratory Intestinal obstruction Partial gastrectomy Entero-enterostomy Gastro enteros'omy Entero-enterostomy Appendectomy Appendectomy Appendectomy with local peritonitis Appendectomy with general reritonitis Abscess of liver Cholecystolomy Cholecystostomy Choledacho omy Choledacho omy Choledacho omy Supravaginal hysterectomy Hysteromyomectomy Myomectomy Salpungectomy, single Salpinge-oophorectomy Ovarian cystectomy Ovarian cystectomy Suspensio-uteri Henatoperitoneum Plastic operation for chronic peritonitis	7 3 229 2,388 124 1 3 25 3 1 1 4	1	1 4	1	10 3 229 2,3%8 124 1 4 29 3 1 1	
Skin graft Salvarsan injections Arsphenamine, intranenous Cauterizations Laparotomy For general peritonitis Exploratory Intestinal obstruction Partial gastrectomy Entero-enterostomy Gastro enteros'omy Enterorhaphy Enterorhaphy Enterorhaphy Appendectomy Appendectomy with local peritonitis Abscess of liver Cholecystolomy Cholecystolomy Cholecystostomy Cholecystostomy Cholecystostomy Cholecystoetomy Hysteromyomeetomy Myomeotomy Myomeotomy Salpuractomy Salpuractomy, Salpuractomy, Salpuractomy, Salpuractomy Salpuractomy, Salpuractomy Salpuractomy, Salpuractomy Salpuractomy, Supensial pesterotomy Salpuractomy, Salpuractomy Salpuractomy, Salpuractomy Salpuractomy, Salpuractomy Salpuractomy Salpuractomy Salpuractomy Salpuractomy Salpuractomy Suspensio-uteri Henatoperitoneum Plastic operation for chronic peritonitis.	3 229 2,388 124 1 3 25 3 1 1 4 1	1	1 4	1	3 229 2,3×8 124 1 4 29 3 1 1	
Salvarsan injections Arsphenamine, intranenous Cauterizations. Laparotomy. For zeneral peritonitis. For tuberculous peritonitis. Exploratory. Intestinal obstruction Partial gastrectomy Entero-enterostomy Gastro enteros'omy Enteror haphy. Enteror haphy. Appendectomy with local peritonitis. Appendectomy with local peritonitis. Appendectomy with general peritonitis. Abscess of liver. Cholecystotomy Cholecystostomy Cholecystostomy Cholecystostomy Cholecystostomy Pan-hysterectomy Burnayaginal hysterectomy Hysteromyowectomy Myomectomy Salpuractomy, single Salpingectomy, double Salpingectomy, double Salpingectomy Ovarian cystectomy Ovarian cystectomy Suspensio-uteri. Henatoperitoneum Plastic operation for chronic peritonitis.	229 2,388 124 1 3 25 3 1 1 4 156	1	1 4	1	229 2,3×8 124 1 4 29 3 1 1 4	
Arsphenamine, intranenous Cauterizations. Laparotomy, For general peritonitis. Exploratory. Intestinal obstruction Partial gastrectomy Entero-enterostomy Gastro enteros'omy Enterorhaphy. Enterorhaphy. Appendectomy with local peritonitis. Appendectomy with local peritonitis. Appendectomy with general peritonitis. Appendectomy with general peritonitis. Abscess of liver. Cholecystolomy Cholecystostomy. Choledystoctomy. Pan-hysterectomy. Supravaginal hysterectomy Hysteromyomectomy Myomectomy. Salpingectomy, Gouble. Salpinge-oophorectomy. Ovarian cystectomy. Suspensio-uteri. Hematoperitoneum Plastic operation for chronic peritonitis.	2,388 124 1 3 25 3 1 1 4 156	1	4		2,3×8 124 1 4 29 3 1 1 1	
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For general peritonitis. For tuberculous peritonitis. Exploratory. Intestinal obstruction Partial gastrectomy Entero-enterostomy Entero-enterostomy Enterorlhaphy. Enterorlhaphy. Enterorlhaphy. Appendectomy with local peritonitis. Appendectomy with local peritonitis. Appendectomy with general peritonitis. Abscess of liver. Cholecystolomy Choledacho omy Choledacho omy Cholecystoctomy Pan-hysterectomy Pan-hysterectomy Hysteromyowectomy Myomectomy Salpuractomy, Single Salpuractomy, Gouble Salpingo-ophorectomy Ovarnan cystectomy Ouphorectomy Suspensio-uteri. Henatoperitoneum Plastic operation for chronic peritonitis.	3 25 3 1 1 4 4 1 156	1	4		29 3 1 1 4	
For tuberculous peritonitis.  Exploratory	3 25 3 1 1 4 4 1 156	1	4		29 3 1 1 4	
Exploratory. Intestinal obstruction Partial gastrectomy Entero-enterostomy Gastro enteros'omy Enteroctomy Appendectomy Appendectomy Appendectomy with local peritonitis. Appendectomy with local peritonitis. Abscess of liver. Cholecystolomy Cholecystolomy Cholecystostomy. Choledacho omy Cholecystoctomy Pan-hysterectomy Hysteromyomectomy Myomectomy Suppravaginal hysterectomy Hysteromyomectomy Myomectomy, single Salpingo-oophorectomy Ovanan cystectomy Ovanan cystectomy Suspensio-uteri. Hematoperitoneum Plastic operation for chronic peritonitis.	25 3 1 1 4 1 156	1	4		29 3 1 1 4	•••••
Intestinal obstruction Partial gastrectomy Entero-enterostomy Gastro enteros'omy Enteror haphy. Enteror haphy. Appendectomy Appendectomy with local peritonitis. Appendectomy with general reritonitis. Abscess of liver. Cholecystolomy Cholecystostomy Cholecystostomy Cholecystoctomy Pan-hysterectomy Burnavaginal hysterectomy Myomectomy Salpuractomy, single Salpingectomy, double Salpingo-ophorectomy Ovarian cystectomy Ovarian cystectomy Suspensio-uteri. Henatoperitoneum Plastic operation for chronic peritonitis.	3 1 1 4 4 1 156	1			3 1 1 4	•••••
Partial gastrectomy Enter-o-enterostomy Gastro enteros'omy Enter-ornhaphy. Enter-ctomy Appen-lectomy Appen-lectomy with local peritonitis. Aptendectomy with general peritonitis. Abscess of liver. Cholecystolomy Cholecystolomy Cholecystostomy. Choledacho omy Cholecystoctomy Pan-hysterectomy Pan-hysterectomy Hysteromyomectomy Myomectomy Salpuractomy, single Salpingectomy, double. Salpinge-oophorectomy Ovarian cystectomy Ovarian cystectomy Suspensio-uteri. Hematoperitoneum Plastic operation for chronic peritonitis.	1 4 1 156				1 1 4	•••••
Entero-enterostomy Gastro enteros'omy Enteror/haphy. Enteror/haphy. Enteror/haphy. Appendectomy Appendectomy with local peritonitis. Appendectomy with general peritonitis. Abscess of liver. Cholecystolomy Cholecystotomy Cholecystotomy Cholecystoctomy Pan-hysterectomy Pan-hysterectomy Hysteromyomectomy Myomectomy Salpingectomy, Gouble. Salpingectomy, Gouble. Salpinge-oophorectomy Ovarian cystectomy Ouphorectomy Suspensio-uteri. Hematoperitoneum Plastic operation for chronic peritonitis.	1 4 1 156	1			1 4	
Gastro enteros'omy Enterror haphy Enterror haphy Appen dectomy Appendectomy with local peritonitis. Appendectomy with general reritonitis. Abscess of liver. Cholecystolomy Cholecystostomy Cholecystostomy Cholecystoctomy Pan-hysterectomy Bupravaginal hysterectomy Hysteromyomectomy Myomectomy Salpuractomy, single Salpingectomy, double Salpinge-oophorectomy Ovarian cystectomy Ovarian cystectomy Suspensio-uteri Hematoperitoneum Plastic operation for chronic peritonitis.	1 156	1			4	
Enterfor haphy.  Enterectomy Appendectomy Appendectomy with local peritonitis. Appendectomy with general peritonitis. Appendectomy with general peritonitis. Abscess of liver. Cholecystostomy Cholecystostomy Cholecystoctomy Pan-hysierectomy Pan-hysierectomy Hysteromyomectomy Myomectomy Salpingectomy, Gouble. Salpinge-ophorectomy Ovarian cystectomy Ouphorectomy Suspensio-uteri. Hematoperitoneum Plastic operation for chronic peritonitis.	1 156		. i			
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Appen ectomy Appen ectomy with local peritonitis. Appendectomy with general peritonitis. Abscess of liver. Cholecystolomy Cholecystostomy. Cholecystoctomy. Pan-hysterectomy Pan-hysterectomy Hysteromyomectomy Myomectomy Salpuractomy, single Salpingo-cophorectomy Ovanan cystectomy Ovanan cystectomy Suspensio-uteri. Hematoperitoneum Plastic operation for chronic peritonitis.	156				1	• • • • • • • • •
Abscess of liver. Cholecystolomy Cholecystostomy. Cholecystostomy. Cholecystostomy. Pan-hysterectomy Supravaginal hysterectomy. Hysteromyomectomy Myomectomy. Salpurectomy, single. Salpingo-oophorectomy. Ovarian cystectomy. Ovarian cystectomy. University of the supravaginal statement of the supravaginal statement. Henatoperitoneum. Plastic operation for chronic peritontis.			20		188	• • • • • • • • •
Abscess of liver. Cholecystolomy Cholecystostomy. Cholecystostomy. Cholecystoctomy. Pan-hysterectomy Pan-hysterectomy Hysteromyomectomy Myomectomy Salpurectomy, single Salpurectomy, double. Salpingo-oophorectomy Ovarian cystectomy. Ovarian cystectomy Suspensio-uteri. Heinatoperitoneum Plastic operation for chronic peritonitis.			32			• • • • • • • • •
Abscess of liver. Cholecystolomy Cholecystostomy. Cholecystostomy. Cholecystoctomy. Pan-hysterectomy Pan-hysterectomy Hysteromyomectomy Myomectomy Salpurectomy, single Salpurectomy, double. Salpingo-oophorectomy Ovarian cystectomy. Ovarian cystectomy Suspensio-uteri. Heinatoperitoneum Plastic operation for chronic peritonitis.			. 20	1	32	
A bscess of liver. Cholecystolomy Cholecystostomy Cholecystostomy Cholecystoctomy Fan-hysterectomy Supravaginal hysterectomy Hysteromyomectomy Myomectomy Salpurectomy, single Salpingectomy, double Salpinge-oophorectomy Ovarian cystectomy Outline open of the supravaginal hysteretomy Hysteromy Suspensio-uteri Hematoperitoneum Plastic operation for chronic peritonitis.	10	1	8		18	
Cholecystolomy Cholecystostomy Choledacho omy Choledacho omy Cholecystoctomy Pan-hysterectomy Supravaginal hysterectomy Hysteromyomectomy Myomectomy Salpungectomy, single Salpungectomy, double. Salpinge-coophorectomy Ovanan cystectomy Ovanan cystectomy Suspensio-uteri. Hematoperitoneum Plastic operation for chronic peritonitis.	3	1 *	. 2	1	5	
Cholecystostomy. Choledacho omy. Choledacho omy. Cholecystoctomy. Pan-hysterectomy. Supravaginal hysterectomy. Hysteromyomectomy. Myomectomy. Salpinectomy, single. Salpinectomy, double. Salpineco-ophorectomy. Ovanan cystectomy. Ovanan cystectomy. Suspensio-uteri. Heinatoperitoneum. Plastic operation for chronic peritonitis.	17		ī	1. *	18	
Choledacho omy Cholecystactomy Pan-hys:erectomy Supravaginal hysterectomy Hysteromyomectomy Myomectomy Salpurectomy, single Salpurectomy, double Salpurectomy, double Ovarian cystectomy Ovarian cystectomy Suspensio-uteri Heinatoperitoneum Plastic operation for chronic peritonitis.	3		î		4	
Cholecystectomy Pan-hysterectomy Supravaginal hysterectomy Hysteromyomectomy Myomectomy Salpurectomy, single Salpurectomy, double. Salpinge-oophorectomy Ovarian cystectomy Ouphorectomy Suspensio-uteri. Hematoperitoneum Plastic operation for chronic perionitis.	ĭ		1		i	
Pan-hysterectomy Supravaginal hysterectomy Hysteromyomectomy Myomectomy Salpinectomy, single Salpinectomy, double Salpineco-ophorectomy Ovanan cystectomy Oophorectomy Suspensio-uteri Heinatoperitoneum Plastic operation for chronic peritonitis.	7		. 3		10	
Supravaginal hysterectomy.  Hysteromyomectomy Myomectomy, single Salpingectomy, double. Salpingectomy Ovarian cystectomy Ovarian cystectomy Suspensio-uteri Heinatoperitoneum Plastic operation for chronic peritonitis.			. 2		2	
Hysteromyomectomy Myomectomy, Salpinectomy, single Salpinectomy, double Salpinecoophorectomy Ovarian cystectomy Oophorectomy Suspensio-uteri Heinatoperitoneum Plastic operation for chronic peritonitis.	39		$\bar{1}$	2	46	
Myomectomy, Salpingectomy, single Salpingectomy, double. Salpingo-oophorectomy. Ovarian cystectomy. Oophorectomy. Suspensio-uteri. Heinatoperitoneum Plastic operation for chronic peritonitis.	32				32	
Salpineectomy, single Salpineectomy, double Salpineectomy Ovarian cystectomy Oophorectomy Suspensio-uteri Heinatoperitoneum Plastic operation for chronic peritonitis	2		. 1		3	
Salpingo-oophorectomy. Ovarian cysteetomy. Oophorectomy. Suspensio-uteri. Henatoperitoneum. Plastic operation for chronic peritonitis.	14		. 5		19	
Ovanan cystectomy Oophorectomy Suspensio-uteri Heinatoperitoneum. Plastic operation for chronic peritonitis	5		. 11		16	
Oophorectomy Suspensio-uteri. Hematoperitoneum Plastic operation for chronic peritontis.	28	1	14	1	42	Ł
Suspensio-uteri.  Hematoperitoneum.  Plastic operation for chronic peritonitis.	11		2 3		13	
Plastic operation for chronic peritonitis.	6		. 3		9	
Plastic operation for chronic peritonitis			. 13		98	
Flastic operation for enrong peritonitis	85				1	
D	85				2	
Rupture of liver	1		2		1	
Ectopic gestation	1 1		2			
Stab wound of the abdomen	1 1				2	
Gunshot wound of ahdomen	1	1	5		2 12	
Major operations, various other	1 1 2 7	1	5	2	$\begin{array}{c}2\\12\\2\end{array}$	••••••
Minor operations, various other	1 1 2 7	1	5 2 1	2	2 12 2 1	• • • • • • • • •
· ·	1 1 2 7	1	5 2 1 21	2	12 12 2 1 51	
Total	1 1 2 7	1	5 2 1	2 1	2 12 2 1	

## TABLE XII.—REPORT OF EYE AND EAR DEPARTMENTS.

	Nu	mber.		Nur	nber.
Operations performed.	Ancon Hospital.	Santo Tomas Hospital.	Operations performed.	Ancon Hospital.	Santo Tomas Hospital
Eye: Advancement. Cateract extraction: Simple Combined Chalazion, removal Conjunctival flap. Enucleation Foreign body, removal Hordeolum, incision Iridectomy Lachr ymal operations; Dilatation of ducts. Dissection of sac. Lid operations: Ectropion. Entropion. Expression of lids. Plastic. Needling. Pterygium. Refractions Selerotomy Tenotomy Ear: Furnnele, incision. Foreign body, removal. Mastoid operation: Simple. Radical. Paracentesis. Plastic. Polypi, removal.	1 24 2 2 25 5 1 4 4 19 9 14 11 1 1 1 1 2 1 8 16 9 2 2 31 1 3 3 1 1	61 6 6 3 16 12 12 2 4 4 4 4 15 37 2 23 37	Nose: Cauterization Foreign body, removal Plastie. Polypi, removal Rhinoplasty. Sinuses: Ethmoid, simple. Ethmoid, radical. Frontal, simple. Frontal, radical. Maxillary, puncture and irrig. Maxillary, drainage. Submucous resection. Turbineetomy. Pharynx: Adenoidectomy. Cauterizations. Peritonsillar abscess, incision. Retropharyngeal abscess, incision. Tonsiilectomy. Uvulectomy. Larynx: Abscess, incision. Foreign body, removal. Trachea: Tracheotomy.	5 4 4 4 4 4 4 4 4 4 4 8 8 8 8 8 5 5 10 11 4 8 8 29 176 4 4 18 18 11 1 1	22 22 1 152 2

### TABLE XII-A.—REPORT OF X-RAY DEPARTMENTS.

Nature of examinations,	Ancon Hospital.	Santo Tomas Hospital.	Nature of examinations.	Ancon Hospital.	Santo Tomas Hospital.
Arm and forearm		106	Liver	5 17	30
Chest	283 427	38	Pelvis	45	12 10
Elhow	86	26	Shoulder	103	40
Foot and ankle	365	24	Sinus	135	34
Foreign body	34 65	14 18	Spine	$-\eta$	46
Gall-bladder	201	74	Spleen. Stomach.	215	128
Head.	66	37	Thigh	56	50
Hip	55	32	Thorax		160
Jaw	47	80	Treatments	60	84
Kidney	124	12	Wrist	138	22
Knee	95 75	46	(D-4-1	0.000	1 177
Leg	75	48	Total	2,882	1, 177

## CLASSIFICATION OF PLATES USED.—Ancon Hospital.

6½ by 8½	Dental films. 1,448
8 by 10 1,631	Dental films
10 by 12	
14 by 17	Total

## TABLE XIII.—WARD LABORATORY REPORTS.

	Ancon Hospital.	Colon Hospital.	Santo Tomas Hospital.
Blood examinations (total number)	6, 232	1,636	2,406
Malaria estivo-autumnal	434	167	178
Malaria tertian Malaria mixed, tertian and estivo-autumnal	198	50	106
	8	1	
Filaria.  Spirillum of relapsing fever.  White blood counts.  Red blood counts.  Differential counts.  Homoglobin estimations.  Stool examinations (total number).	3		
Spirillum of relapsing fever	4	6	
Red blood counts	2,557 502	408 42	106
Differential counts	1,073	122	55
Homoglobin estimations.	4,143	196	682
Stool examinations (total number)	7,340	982	5,873
Ameba coli. Entameba histolytica	58	3 3	17
Uncinaria ova	11 778	52	53 1,357
	375	25	670
Ascaris ova Tricocephalus dispar Bilharzia ova Tinea saginata Strongyloides Trichuris	530	38	771
Tines seginate	8	1	7
Strongyloides	9 276	3 32	
Trichuris	20	8	444
Trichuris Ciliated monads (includes cercomonas hominis and trichomanas	86	14	44
vaginalis),		1	1
Balantidum coli	9		2
Pus cells Blood corpuscles	141 54	22 14	66
Pus, blood and mucus	146	15	77 74
Blood corpuscles. Pus, blood and mucus. Guaiac test for occult blood. Urine examinations (total number).	143	. 26	
Acetore Acetore	24, 564	3,528	6,597
Acetone Diacetic acid	88 61	189	9
Albumen	5,683	831	1,581
Sugar	3,088	5	70
Bile. Guaiac test for occult blood.	445	7	11
Sediment.	165	• 10	3
Epithelial cells.	5,189 7,624	253 424	402
Cylindroids	512	6	169
Hyaline casts.	2,512	213	678
Granular casts. Pus casts.	1,718	156	696
Pus cells	489 5, 979	162 971	63 1,566
Pus cells. Red blood corpuscles. Pus and blood.	778	260	94
Pus and blood	2,607	41	119
Gonococci	140	4	2
Tubercle bacilli. Hemin crystals.	3	25	64
Functional kidney tests. putum (total examinations). Tuberda bacilli	79	1	
putum (total examinations).	4,633	659	1,260
	324	59	257
Pneumococci pinal fluid	257	3	4
Smears of sediment	146	5 2	44 53
l'neumococcus	15	$\tilde{2}$	6
Meningococcus	2		2
Stephylogogus		1	1
Streptococcus Staphylococcus ( ther organisms.	* 1		$\frac{1}{2}$
Cell count	243	3	13
Cell count	1,326	100	7,399
Urethral Vaginal	856	64	239
Eves	181 33	5 3	6, 493 37
Nasal	9	1	64
1111041	18	10	532
1 rostatie	27 .		
Chest		$\begin{bmatrix} 5 \\ 1 \end{bmatrix}$ .	
Skin		10	
Cthers	109	4	48
/idal reactions	- 1		27

## TABLE XIV.—SANTO TOMAS HOSPITAL, PANAMA CITY.

Y REPORT.	8, 9, Whi	879 617 496 A me	Died.  377 81  rican.  Black.	7,784 7,784 0 8,609 Other White. 357 1,074	1440 nations.  Black. 515 7,871 8,386
Number treated.  896 8,964 9,850  dmitted	8, 9, Whi	617 496 A me. 24 19 43	77 81 rican. Black.	5 7,784 8,609 Other White. 357 1,074	156,755 400 113,144
Number treated.  896 8,964 9,850  dmitted	Whi	24 19 43	Black.	Other White. 357 1,074 1,431	Black.  515 7,871  8,386  156,755 400 11. \$1.44
896 8,964 9,850 dmitted	Whi	24 19 43	Black	White.	515 7,871 8,386 156,755 400 11 \$1.44
896 8,964 9,850 dmitted		24 19 43		357 1,074 1,431	515 7,871 8,386 156,755 400 11
9,850 dmitted		43		1,074	7,871 8,386 156,755 400 11 \$1.44
dmitted					156,755 400 11
Y REPORT.					
	-	Wh	oite.	Black.	Total.
				8,184 3,467	8, 169 3, 701
•••••	••••		255	11,615	11,870
Excis Rectum: Hem Fistu Frola General: Thyrr Nerve Varic Gunsl for Stab v Plasti Skin s Laparotoi For ir Explc Gastrr Enter Appei	ion of orrhoid la in a possible of the control of t	breads, reads, r	st.  adical cues adical cues accision of m, radice of m,	e	2 30 30 30 31 31 31 31 31 31 31 31 31 31 31 31 31
	PERATIONS Thorax: Thora Excis Rectum: Hema Fistu Prola General: Thyr Nerve Varic Gunsi for. Stab Plasti Skin Laparoto For ir Exple Gastr Enter Appel Appel Chole Chole Chole Absce Absce Absce Spleei Pen-h Supra Hyste Salpin Salpin Salpir Salpir Salpir Ooph Suspe For of Ruptu Major ope Minor ope	PERATIONS.  Thorax: Thoracotom Excision of Rectum: Hemorrhoid Fistula in a Prolapsus re General: Thyroidect Nerve strett Varicose ve Gunshot we for Stab wound Plastic oper Skin graft. Laparotomy: For intestin Exploratory Gastro ente Enterorrhaj Appendecto Appendecto Appendecto Appendecto Cholecystoc Cholecystoc Cholecystoc Cholecystoc Salpingostor Salpingostor Salpingostor Salpingostor Salpingostor Supravagin Hysteromy Salpingostor Salpingostor Salpingostor Supravagin For optopic Rupture of s Major operation Minor operation	PERATIONS.  Thoraccotomy Excision of brea Rectum: Hemorrhoids, re Fistula in ano, e Prolapsus recture General: Thyroidectomy Nerve stretchin Varicose veins, Gunshot wound for Stab wounds of Plastic operation Skin graft. Laparotomy: For intestinal of Exploratory Gastro-enterost Enterorrhaphy. Appendectomy Appendectomy Appendectomy Cholecystectomy Cholecystectomy Cholecystectomy Cholecystectomy Pen-hysteroston Supravaginal hy Hysteromyomee Salpingo-tomy, Salpingo-tomy, Salpingo-tomy, Salpingo-tomy, Suppensio-uterl. For optopic gest Major operations, va Minor operations, va	PERATIONS.  Thorax: Thoracotomy Excision of breast Rectum: Hemorrhoids, radical cur Fistula in ano, excision of Prolapsus rectum, radica General: Thyroidectomy Nerve stretching Varicose veins, excision of for Stab wounds of soft parts Plastic operation for seve Skin graft. Laparotomy: For intestinal obstruction Exploratory Gastro enterostomy Appendectomy with loca Appendectomy with loca Appendectomy with loca Appendectomy with loca Appendectomy of liver, thoracol Spleenectomy Cholecystectomy Cholecystectomy Cholecystectomy Salpingostomy, single Salpingostomy, single Salpingostomy, double Salpingostomy, double Salpingostomy Oophorectomy Usupensio-uterl For optopic gestation Rupture of spleen Major operations, various of Minor operations, various	PERATIONS.  Thorax: Thoracotomy. Excision of breast Rectum: Hemorrhoids, radical cure. Fistula in ano, excision of. Prolapsus rectum, radical excision. General: Thyroidectomy. Nerve stretching. Varicose veins, excision of Gunshot wounds of soft parts, operation Plastic operation for severe injury. Skin graft. Laparotomy: For intestinal obstruction. Exploratory. Gastro-enterostomy. Enterorrhaphy. Appendectomy with local peritonitial Appendectomy with local peritonitial Appendectomy. Cho'ecystotomy. Cho'ecystotomy. Cho'ecystotomy. Abscess of liver, laparohepatotomy. Abscess of liver, laparohepatotomy.

## TABLE XV.—REPORT OF BOARD OF HEALTH LABORATORY.

Bacteriological:	~.	Wild and domestic animals—Continued.	
Autorenous vaccines prepared	. 51 . 405	Brain films from cows	41
Plood cultures	. <b>4</b> 00	Horse's hoof cultures	1
group	978	Photographs taken	83
group Stools cultured for typhoid-dysentery	7	Typhoid vaccinations.	16
group (food handlers)	309	Smallpox vaccinations	35
Urines cultured for typhoid group	568	Chemipal:	
Urines cultured for typhoid group (food	1	Spinal fluids—	
handlers). Urines cultured (other organisms)	309	Colloidal gold	269
Milks—	. 279	Rutvria acid	289
Corozal hospital dairy	. 187	Ammonium sulphate	289 283
Mindi dairy	187	Ars(nic	200
Mindi dairy Panama dairis (through H. O. P.).	444	Blood—	- 4
Commissaries	. 18	Uric acid	52
Condens'd	. 40	Urea	62
Panama 12e erean	4.7	Creatinin.	58
Colon dairies (through H. O. C.)	. 12	Glucose Cholestorin	43
Powdered	. 1	Vonpret in mitrogen	6
Milk bottles Formulas from wards.:	$\begin{array}{ccc} & 3 \\ & 2 \end{array}$	Nonprotein nitrogen	52
Naso-pharvngeal cultures	524	Drind blood	472
Sputum cultures	476	Deiry milk Condensed milk	16
Throat cultur(s	1,521	Mother's milk.	26
Ear cultures	. 20	Powdered milk.	ı
Eve cultures	. 2	Ice cream	56
Pus from chest	. 1	Ice cream Coloring matter for ice cream	1
Pus from abscess		Cream	1
Pleural fluid cultures	19	Water Washings from milk bottle	4
Spinal fluid cultures.	61	Washings from milk bottle	1
As itia fluid cultures. Fluid from knee	. 3	Utings	147
Gland culture	1	Urine for acetone	- 1
Gland culture. Fluid from gall bladder	1	Urine for uricacid. Urine for urea.	1
Conjuncti al cultures	2	Urin for glucose.	3
Cann'd ovsters	ĩ	Urine for formaldehyde	ĭ
Water culture	ī	Urin for arsenic	6
Flour culture. Phenol coefficient test of hycol.	1	Urin · for lead	. 2
Phenol coefficient test of hycol	1	Gastric analyses	32
Autonsy specim n cultures	139	Cigar ttes	1
Miscellancous cultures	88	Gasoline	6
Stools examined for parasites.	105	Bal ing powder	1
Stools examined for amoba.	86	Butter	5
Blood films examined for malaria para-	1,089	Oleomargarine	25
sites.  Dark field examinations	78	Cannad salmon	10
Throat smears.	62	Canned salmon Beer for alcohol	16
Sputums examined for T. B	98	Alcohol	ĩ
I eprosy examinations	67	Port wine sediment	î
I oprosy examinations. Urines examined for T. B.	12	Cognac	î
Varinal sinears	25	Beverages	7
Pus smears Urethral smears	96	Hair toma	1
Chin lesions	91	Gun test	14
Skin lesions Examination for yaws.	3 1	Flour	4
Serological:	- 1	Chiakan tissua for phoenhorus	3 3 1
Wassermann tests	12 047	Chicken tissue for phosphorus.  Meat, cooked	3
Agglutination tests	159	Pleural fluid	î
Blood typing	3	Pille	3
Pathological:	i	Arsenical dip.	5
Autopsies performed (human)	371	Arsenical dip. Cil, "T. N. T.". Powder, for alkaloid.	1 3 5 1 1 3 1 4 5 3 1
Surgical tissues examined and reported.	726	Powder, for alkaloid	1
Microscoric slides prepared— Surgical preparations	5 141	Tankage. Crude carbolic acid	1
Autopsy preparations	5,141 3,542	Hog food	3
Autopsy preparations. Animal preparations.	1, 425	Hog Ded Sulphuric acid	1
Wild and domestic animals:	2, 120	To icological examination.	** 5
Cultures of cattle cars	299	Carbon dio ide	3
Cultures of cattle spicens	10	Carbon dio ide. Cocoa, for powdered glass	ĭ
Cultures of horse ears	3	Clav	$\bar{2}$
Cultures of hog car.	1	Calibration of clinical thermometers	1,000
Cultures of scrapings from ear and hide. Animal autopsies.	4	Safety matches	21
Animal autopsies	96	Caterpillars for arsenic	3
Fowl autopsies.	19	Rice	2
Blood Hims examin d	597	Coconut meal	2 2
Animal tissue specimens examined	402	Fluid, for arsenie	1
Immunization of Corozal cattle	24	Taleum powder	1
Dog observation	1	Renai calcun	$\frac{1}{2}$
Dog stool. Animal blood cultures.	1	Calculi bility	ĩ
Animal bomoglobis	39	Bleaching powder	1
Animal hemoglobin	41	Potassium citrate	1
Rats examined	17,607	Hide, for mercury	1
Animal experimentation	116	l i puid, for strychnine	1 3
	0 1	Sugar	3
8847 90 99			

### TABLE XV-REPORT OF BOARD OF HEALTH LABORATORY-Continued.

(lots). 54 Yellow fever mosquitoes identified, adults. 565 Yellow fever mosquitoes identified, lar- ve (lots). 304 All other mosquitoes identified, adults. 19.510 All other mosquitoes identified, larvæ (lots). 194	ECONOMIC ENTOMOLOGY—continued.  appper; leaf and fly beetles; palm weevil; bag worms; coconut caterpillers: chinch bugs; papaya fruit fly; West Indian fruit ly; avocado weevil; banana borers; fall army worm; Cuban laurel thrips; several species of mill insects; etc.  ant diseases.—Anthracnose of citrus and avocado; citrus seab; sooty mold; powdery mildew; mal dl goma; citrus root rot. dertaking:  Bodies handled
---	--

Table XV-A.—Contagious and Infectious Diseases Reported to the Chief Health Office, The Panama Canal, During the Year 1919–1920.

	Panama.	Colon.	Canal Zone.	Non- resident.	Total.
Acute contagious conjunctivitis, pink eye	312 4 128 243 4 7 1 35	15 23 75 1 1 480 3 106 97	8 116 39 3 2 471 3 798 112 3 56	1 9 2 4 1 338 11 1 1 1 7	22 233 194 18 1,307 11 1,377 463 8 77
Relapsing fever Scarlatina Scarlet fever Smallpox. Puberculosis. Typhoid fever W hooping cough Yaws. Yellow fever Yaws.	4 18 282 10 23	1 122 7 147	1 1 1 53 4 92	9 43 14	2 50 3 26

### <sup>1</sup> Received at Quarantine from Nicaragua.

## TABLE XVI.—QUARANTINE SERVICE AT THE PORTS OF BALBOA-PANAMA AND CRISTOBAL-COLON.

Vessels inspected and passed. Vessels detained in quarantine.	3, 410 97
Number of days held, 205. Vessels given provisionsl pratique	71
TotalSupplementary inspections of vessels.	3,578
Vessels fumigated: For mosquitos, SO2	39
For mosquitos, NACN For rats, SO2 For rats, SO2 and NACN	66
For rats, SO2 and NACN For disease formalin	
Total Crew inspected on arrival Passengers inspected on arrival	168, 964
Passengers inspected on arrival.  Crew passed on certificate of medical officer.  Passengers passed on certificate of medical officer.	71,700
Total.	

Supplementary inspections of persons on detained vessels Persons detained in quarantine station. Number of days held:	7, 365 6, 131
Yellow fever.         16,453           Plague.         374           Other diseases.         404	
	20,169
Number of days held:       17,956         Yellow fever.       2,173         Other diseases.       2,424	
Total. 22,553  Persons vaccinated. Persons vaccinated and given certificates good for five years.  Persons detained in quarantine station for immigration laws.	1,190 16 228
Number of persons deported under immigration laws  Table XVI-A.—Report of Quarantine Officer, Bocas Del Toro.	550
Vessels inspected and passed. Crew inspected and passed. Passengers inspected and passed. Passengers in transit inspected and passed. Passengers vaccinated on coastwise vessels.	295 8,417 3,250 4,328 431

## TABLE XVII.—PERSONNEL REPORT OF THE HEALTH DEPARTMENT.

[Number of employees on June 30, each year.]

	Gold.		Silver.		Total.	
	1919	1920	1919	1920	1919	1920
Chief health office.	4	3			4.	
Medical storehouse	5	4	5	4	10	š
Quarantine service	9	13	38	37	47	50
Health office, Panama	10	11	150	131	160	142
Health office, Colon	15	15	154	151	169	166
Ancon Hospital	123	135 25	236	240	359	375
Colon Hospital. Santo Tomas Hospital.	18	25	32	35	50	60
Pala Seco Loner Asylum	6 2 5	9	21	35	23	37
Palo Seco Leper Asylum. Zone sanitation.	5	6	306	147	311	153
Corozal Hospital	16	14	96	89	112	103
Line dispensaries	9	10	8	8	17	18
Total	222	244	1,046	877	1,268	1,121

### APPENDIX J.

# REPORT OF THE GENERAL PURCHASING OFFICER AND CHIEF OF THE WASHINGTON OFFICE.

THE PANAMA CANAL, Washington, D. C., July 14, 1920.

Sir: I have the honor to submit the following report on the work of the Washington office of The Panama Canal for the fiscal year

ended June 30, 1920:

There have been no important changes in the organization during the fiscal year. The undersigned has remained in charge throughout the year as general purchasing officer and chief of office, with the following divisions under his supervision: Administrative office, including the appointment division and the correspondence and record division; office of the assistant auditor; and the purchasing

department.

The work of the appointment division has been handicapped during the past fiscal year by unusual conditions, such as the disruption of the sailing schedule to the Isthmus during the rush of travel in the summer and fall of 1919, due to labor troubles in New York Harbor, principally the longshoremen's strike; the unsettlement of the labor market in the United States, and shortage of skilled and technical men, necessitating unremitting efforts in filling requisitions and maintaining the high standards required of appointees, and the loss during the year of most of the experienced clerks engaged on this work which placed added burdens on the few remaining trained employees in handling the work with new assistants.

The largest single requisition received was for 130 building tradesmen for temporary service on short notice, dated May 5, 1920. Forty-two per cent of those tendered employment during the year failed to accept. Seventeen hundred and ninety-two persons were tendered employment in the grades above that of laborer, of which number 1,032 accepted and were appointed, covering 98 different positions. Four thousand five hundred and ninety-two persons, including new appointees, those returning from leave of absence, and members of employees' families, were provided with transportation from the United States to the Isthmus; and in response to inquiries and applications for employment during this period, and in the issuance of appointments, 21,435 letters were written, 7,525 telegrams sent, and 43,222 circulars mailed.

The increasing commercial use of the Canal since the war has brought with it a corresponding increase in the work of the correspondence and record division in answering inquiries and disseminating general information and literature regarding the Canal, in addition to the usual amount of general correspondence prepared for the signatures of the chief of office and Secretary of War concerning Canal affairs. The work of the division also includes the handling of matters pertaining to legislation affecting the Canal and the prepara-

847, 382. 03

tion of special reports called for by congressional committees, as well as the deciphering and enciphering of cablegrams. Another feature of the work of this division which has grown to be quite an item is the handling of many matters affecting the Panama Railroad Company in its relations with various departments of the Government at

Washington.

The assistant auditor's office prepares all vouchers for payment to be made in the Washington office; keeps all records relative to payments and financial transactions; conducts correspondence relative to payment of claims; has charge of collections; examines and approves transfer settlements; gives the disbursing clerk's accounts an administrative examination before submission to the Auditor for the War Department; prepares the statistical data required to show the distribution of the expenses of the Washington office; makes reports on all claims submitted to the Auditor for the War Department for settlement; prepares all contracts and bonds; has charge of all work in connection with deposits for tolls made with the Treasurer and Assistant Treasurers of the United States; and passes upon all legal questions involved in the transactions of the business of the Washington office of The Panama Canal. The following statements show the volume of the transactions in the assistant auditor's office, which include the work of the disbursing clerk:

Claim statement.

Otalin Blatement,		
On hand July 1, 1919		
To be accounted for		17, 269 16, 881
On hand June 30, 1920		388
There was an increase of 2,184 claims rece 2,010 claims examined and passed for payr year.		
Financial statement of receipts and disbursements Jul	y 1, 1919, to Ju	ne 30, 1920.
Disbursing clerk's balance, July 1, 1919: General account as disbursing clerk. Special deposit account.	\$521, 094, 47 99, 980, 68	\$621, 075. <b>1</b> 5
Receipts: From United States Treasury Miscellaneous collections	8, 805, 000. 00 1, 760, 774. 10	10, 565, 774. 10
To be accounted for.  Disbursements:  Vouchered expenditures	8, 180, 673, 25 493, 327, 73 96, 245, 79 1, 569, 220, 45	11, 186, 849. 25 10, 339, 467, 22
Disbursing clerk's balance, June 30, 1920: General account as disbursing clerk. Special deposit account.	652, 093. 49 195, 288. 54	847, 382. 03

During the fiscal year 13,635 disbursement vouchers, amounting to \$8,180,673.25, and 225 collection vouchers, amounting to \$1,678,-875.44, were prepared. One thousand six hundred and sixty-one settlements by transfer of appropriations, aggregating \$2,106,758.79, were given an administrative examination and recommendation made thereon. There was an increase of 1,162 disbursement vouchers and a decrease in disbursements of \$575,331.13, as compared with the last fiscal year. There was an increase, however, of \$1,138,626.79 in miscellaneous collections made.

Reports were made upon 31 claims submitted to the Auditor for the War Department, either for direct settlement or for settlement by the auditor after claims had been filed by the contractor. The amount involved in these claims to be passed upon by the Auditor for the War Department upon the reports of this office was \$32,958.20.

During the fiscal year 121 contracts were prepared, amounting to \$5,130,714.76. This was an increase of 37 in number and of \$1,678,-

077.18 in amount in comparison with the fiscal year 1919.

The assistant auditor, as legal advisor in the United States for The Panama Canal, has, by the direction of the chief of office, continued to render assistance to the Department of Justice in connection with the preparation for trial and at the trial in the courts of all cases in connection with action brought by or against The Panama Canal. During the fiscal year suits have been pending against The Panama Canal involving claims for \$19,339.48. The disposition of these suits, so far as they have been completed, is as follows:

The case of Patrick Corr & Sons, under annual contract No. 1033, Court of Claims No. 33298, was decided in favor of the Government and damages on its counterclaim amounting to \$6,409.25 were

recovered.

The case of the Pelton Water Wheel Company v. United States, in the Court of Claims, under Washington Order No. 29725 and supplements thereto, was dismissed. In this case the contractor claimed damages amounting to \$6,037.18.

The sum of \$779.82 was collected on the bond of George R. Johnson,

under Washington Order No. 62856.

The only case still pending is that of J. Edward Ogden & Company v. United States, in the District Court of the Southern District of New York, Washington Order No. 60890. This is a suit for \$1,468.89 damages. It is ready for trial, but has not yet been reached.

No new suits were brought against The Panama Canal during the fiscal year. Neither have there been any suits brought by the Washington office of The Panama Canal. This shows that The Panama Canal has been able for the last two fiscal years to make expenditures and purchases involving more than \$20,000,000 without a lawsuit.

The purchasing department has been continued as heretofore, nominally under the supervision of the Chief of Engineers, United States Army. The work of the purchasing department has been conducted, in general, in the same maner as in previous years. The purchasing department has also continued practically the same methods relative to the procurement of surplus war material from the War Department and other Government departments having surplus material on hand owing to the cessation of war activities, outlined in my report for the fiscal year ending June 30, 1919. In

connection with utilizing the surplus war material by the several Government departments and independent Government establishments, an Executive order was issued on August 27, 1919, in furtherance of section 5 of the act approved July 11, 1919, "Making appropriations to supply deficiencies, etc.," which reads as follows, and is self-explanatory:

### EXECUTIVE ORDER.

Whereas section 5 of the act approved July 11, 1919, "Making appropriations to supply deficiencies, etc.," requires—

That the heads of the several executive departments and other responsible officials in expending appropriations contained in this or any other act, so far as possible shall purchase material, supplies, and equipment, when needed and funds are available, from other services of the Government possessing material, supplies, and equipment no longer required because of the cessation of war activities. It shall be the duty of the heads of the several executive departments and other officials, before purchasing any of the articles described herein, to ascertain from the other services of the Government whether they have articles of the character described that are serviceable. And articles purchased by one service from another, if the same have not been used, shall be paid for at a reasonable price not to exceed actual cost, and if the same have been used, at a reasonable price based upon length of usage. The various services of the Government are authorized to sell such articles under the conditions specified and the proceeds of such sales shall be covered into the Treasury as a miscellaneous receipt: *Provided*, That this section shall not be construed to amend, alter, or repeal the Executive order of December 3, 1918, concerning the transfer of office material, supplies, and equipment in the District of Columbia falling into disuse because of the cessation of war activities.

And whereas, in order to carry out properly the provisions of this act. it is necessary to establish a central agency where information relative to the surplus material, supplies, and equipment of the various services of the Government may be obtained, I hereby designate the General Supply Committee, of the Treasury Department, as the organization to maintain records of such surplus material, supplies, and equipment as may be reported to it by the heads of the various services of the Government. It shall further be the duty of the General Supply Committee to answer promptly inquiries from the head of any service of the Government, or his authorized representative, relative to the probable availability of any surplus material, and to inform the person making the inquiry what service, if any, has reported the material about which the inquiry is made as excitable.

which the inquiry is made as available.

It shall be the duty of the head of each of the several executive departments and independent establishments of the Government to designate a central agent for his particular service to whom all surplus supplies of his service, under the act, shall be reported; and it shall be the duty of this central agent to advise the General Supply Committee of the surplus material, supplies, and equipment available from his service, to answer inquiries from other services in regard to such material, supplies, and equipment, and to arrange with the other services the details of any purchase which may be made under the provisions of this act.

The provisions of this order shall be carried into effect in accordance with regula-

tions to be prescribed by the Secretary of the Treasury.

· Woodrow Wilson.

THE WHITE HOUSE, 27 August, 1919.

In compliance with the instructions contained in the Executive order above referred to, it is, of course, necessary for the purchasing department to forward to the General Supply Committee copies of all of its inquiries for supplies and before making award to ascertain whether or not any of the material for which bids are being invited is available for transfer from the several Government departments. In case the General Supply Committee advises that material is available at the War Department or other Government departments, it is then necessary for the purchasing department to communicate with the department reported as having material available for transfer and ascertain whether the material complies with the Panama Canal specifications, and also to obtain information relative to the price at which offered,

place of delivery, etc. The methods pursued in procuring surplus material, however, are similar to those outlined in my report for the fiscal year ending June 30, 1919, and it is not thought necessary to again go into details relative to same in this report. I might state again, however, that it has always been the policy of the purchasing department to use the utmost endeavor and to extend the fullest cooperation possible toward the disposal of the surplus war material possessed by the War Department and other departments of the Government. In this connection the following communications are interesting and self-explanatory:

THE PANAMA CANAL, PURCHASING DEPARTMENT,
Washington, D. C., March 3, 1920.

Mr. E. C. Morse,

Director of Sales, War Department, Washington, D. C.

Subject: Sale of War Department surplus material to The Panama Canal.

Sir: I have received a memorandum from the Secretary of War reading as follows:

"Memorandum for Mr. Flint. Panama Canal:

"I do not know whether the sales department has any surply's products which would be available for the Canal or not. by the prices which the War Department is selling things for would make it highly desirable for the Canal to buy from the War Department if it is in need of any of the materials of which we are now dispesing of striplises. Please get in touch with Mr. E. C. Morse, director of sales, and find out whether any such economy can be effected.

"Newton D. Baker, "Secretary of War."

Our records show that shortly after the signing of the armistice steps were taken to apprise the War Department of the vario's requirements of The Panama Canal as requisitions were received from the Isthm's, with a view to procuring as much material as practicable from surplus stocks of the War Department in filling our requisitions. In other words, long before any law was passed requiring the various departments to purchase so far as possible material, supplies, and equipment from other services of the Government poss using such material, supplies, and equipment no longer required because of the cessation of war activities, The Panama Canal indicated its willingness to cooperate in every way possible in purchasing surplus material from the War and other departments wherever it was practicable to do so, and arrangements were made, which have been continued, to send copies of all our circulars advertising for material to various offices under the War Department having to do at that time with the disposing of surplus material with a view to offers being made to this office of such material as would fill our requirements. We are now operating under the Executive order of August 27, 1919, under which we advise the General Supply Committee of all our requirements and they in turn advise us if such material appears to be surplus in any of the departments, and if they indicate the material is available in the War Department we immediately so notify the transfer and inventory section, which it is understood has been designated under the provisions of the above-mentioned Executive order as the agency through which arrangements should be made for purchasing surplus materials, with a view to receiving definite advice as to whether such material is available, with the understanding that quotations will be made where the material is available, with the understanding that quotations will be made where the material is available, with the understanding that quotations will be made where the material is available. In addition t

Since the armistice it has been the constant desire of this office to take over as much surplus war material from other departments as may be available at the time we are in the market for same, provided, of course, such material complies with our specifications, or does not vary sufficiently from our specifications to make it impracticable

to use the material on the Isthmis.

We have already perchased  $\phi$  ite a little material from the War Department, but if you desire to suggest any method by which we could take more material propor-

tionately in the future than we have in the past I should be glad to give consideration

to any plan which may facilitate this end.

I have felt that we might at times have purchased material in the past which through not being declared surplus in the War Department at the time we were in the market for it was not offered by the War Department, although it may possibly have become surplus shortly after we made a purchase. On the other hand, the War Department has undoubtedly had surplus materials for which we were not in the market at the time, although we may have come into the market later for such material after the War Department surplus had been disposed of. So far as I can see, it will be very difficult to prevent similar conditions obtaining in the future for the reason that this office can only purchase material as it may be requisitioned from the Isthmus and also because it is understood the Isthmus can not anticipate its requirements beyond what they are now doing.

I should be pleased to make an appointment to discuss this matter further with you

at any time you may appoint.

Very respectfully,

A. L. Flint, General Purchasing Officer.

War Department,
Purchase, Storage and Traffic Division,
Office of the Director of Sales,
Washington, March 10, 1920.

Mr. A. L. FLINT,

General Purchasing Officer, The Panama Canal Purchasing Department,
Washington, D. C.

DEAR SIR: I was very glad to receive your letter of March 3 in connection with supplying to The Panama Canal Zone such materials as are surplus in the War

Department.

Reports have been brought to me by my assistants who are handling these transfers that your department has probably taken more interest in the surplus than any other governmental department. It is sometimes found that the material, which at first glance would seem to be usable in the Zone, can not be used owing to some peculiar conditions or expense of transportation; but if you experience any trouble in arranging satisfactory prices or in getting material delivered, I would be glad to have you take the matter up with me personally.

I do not see where any advantageous change can be made in the method of operating,

I do not see where any advantageous change can be made in the method of operating, provided you are getting satisfactory cooperation from this office; but I would be glad to take up with you any time you may desire questions where there seems to be a difference of opinion, or where it is to the advantage of the War Department to make

a change in the method of operating.

Very truly, yours,

E. C. Morse, Director of Sales.

In connection with the purchase of supplies generally it might be stated that while war conditions are practically over, yet, owing to the labor situation and strikes, and to the fact that the production of material has not kept pace with the demand, high prices have continued during the past year; also deliveries of material are still delayed for long periods in many instances, owing to the abovementioned conditions and also due to embargoes and car shortages

throughout the country.

It might be noted also that owing to labor conditions and shortage of material, competition somewhat decreased during the past fiscal year. This is indicated by the fact that under our regular circulars inviting bids only 5,446 bids were received during the present fiscal year in connection with 124 circulars containing 3,898 classes, as compared with 7,009 bids received in connection with 103 circulars containing 3,896 classes during the fiscal year ending June 30, 1919. I might also add that it has been necessary in many instances to issue two or three calls for bids before obtaining any satisfactory proposals, and to specially communicate with firms requesting them to bid for our requirements.

It goes without saying that on account of the unusual conditions throughout the country and the Government regulations and requirements in connection with the procurement of surplus war material, etc., referred to above, office work and correspondence have necessarily greatly increased, even to a larger extent than during the last fiscal year. The considerable increase in the number of Washington orders placed during the fiscal year, which is somewhat of a criterion as to the amount of the office work, has also increased the work throughout the various branches of the purchasing department. However, notwithstanding the necessity for considerable overtime work, the clerical forces have performed their services with efficiency and willingness. Notwithstanding the good results which have been achieved as a consequence of their long and arduous labors, I feel that if the work does not soon assume a more normal phase it will be necessary to increase the force, as it is not fair to the personnel to expect them to frequently perform overtime work; besides which such conditions, if long continued, are apt to produce discontent and inefficiency. However, it is hoped the resumption of more normal conditions will soon be brought about, thus obviating the necessity of increasing the force. These remarks apply not only to the purchasing department, but to other branches of the Washington office

The indications are at the present time that business conditions throughout the country are getting more normal and that prices have a tendency to lower. It is also noted that competition is getting somewhat keener and the number of bids received under our circular

invitations for supplies is gradually increasing.

As heretofore the principal purchases have been made by the Washington office, although offices in charge of assistant purchasing agents have been continued at New York, New Orleans, and San Francisco. These offices, as stated in previous reports, also act as receiving and forwarding agencies for such materials as have been purchased for forwarding to the Isthmus through their respective ports. A small force of employees has been continued in the Medical Supply Branch, Zone Supply Office, United States Army, New York City, for the purpose of assisting the officer in charge in making purchases of medical and hospital supplies for the Isthmus, most of which supplies have been purchased through that branch.

The same system as heretofore has been continued relative to the preliminary inspection of materials purchased, and a corps of inspectors under the supervision of the inspecting engineer, located at Washington, has been maintained. The work of inspection has been facilitated as heretofore by assistance rendered by the field officers of the Corps of Engineers, United States Army, and by the Bureau of Standards, the Bureau of Mines, the Bureau of Chemistry, of the Department of Agriculture, and the Medical Department, Ordnance Department, Signal Corps, and Quartermaster Corps of the United

States Army.

The number of orders issued during the fiscal year was 8,367, an increase of 898, or 12.02 per cent, as compared with the fiscal year 1919, the number of orders issued during the latter fiscal year being 7,469. The number of orders placed during the fiscal year 1920 exceeds the number issued in any one fiscal year from 1904 to the present fiscal year, with the exception of the fiscal years 1916 and

1917, the number of orders issued during these fiscal years being

8,856 and 8,908, respectively.

The number of orders issued during each fiscal year from 1904 to 1920 is as follows: 1904, 8; 1905, 1,585; 1906, 2,563; 1907, 4,187; 1908, 4,523; 1909, 5,458; 1910, 5,765; 1911, 4,363; 1912, 5,960; 1913, 7,087; 1914, 7,426; 1915, 8,033; 1916, 8,856; 1917, 8,908; 1918, 6,608; 1919, 7,469; 1920, 8,367.

Below is a summary of orders placed through the Washington office of The Panama Canal during each month in the fiscal years

1919 and 1920:

Month.	1918-19	1919–20	Month.	1918-19	1919-20
July	541 625 481 629 482 594 676	656 723 692	February March April May June	601 760 754 659 667 7,469	879 835 576 696 690 8,367

The total value of orders placed by the Washington office during the fiscal year was \$9,133,069.94, as compared with \$6,764,278.62 for the fiscal year 1919, making the grand total of purchases since

the year 1904 \$152,480,188.99.

The amount stated above covering the fiscal year 1920 does not include \$401,774.37 paid during the fiscal year for cement ordered under the continuing contract with the Atlas Portland Cement Company entered into in the year 1909, and supplemental contracts, nor does the grand total given for purchases since the year 1904 include \$8,634,013.81 paid since 1909 up to the end of the fiscal year 1920 for cement placed under the above-mentioned contract. Adding the amount of \$8,634,013.81 paid for cement since 1909 to the end of the fiscal year 1920, would make the grand total for purchases under Washington orders since the year 1904 \$161,114,202.80. This amount does not include orders placed by the assistant purchasing agents of The Panama Canal at New York and New Orleans, and by the Medical Supply Branch, Zone Supply Office, United States Army (which offices purchase material for The Panama Canal upon request of the Washington office). It has not been the practice since 1904 to report the value of such orders, although the amount involved, taken as a whole, is quite a considerable sum.

The sales in the United States of scrap and obsolete Canal material handled by the purchasing department amounted to \$678,402.82, based on 58 sale orders, as compared with \$423,194.90 based on 70 sale orders placed during the fiscal year ending June 30, 1919.

There is submitted with this report a table showing increases in salaries authorized over the organization of July 1, 1918, and increases of numbers of persons employed over the number allowed in the 1920 Book of Estimates, as required by the act of Congress approved July 19, 1919.

Very respectfully,

A. L. FLINT, General Purchasing Officer and Chief of Office.

Brig. Gen. Chester Harding, United States Army, Governor, The Panama Canal, Balboa Heights, Canal Zone. Table showing increases in salaries authorized over organization of July 1, 1918, and increases of numbers of persons employed over number allowed in 1920 Book of Estimates, as required by act of Congress approved July 19, 1919.

•	Increase in pay.		Increase in numbers.	
Designation.	Rate authorized in organization, July 1, 1918.	Increased to-	Number authorized in 1920 Book of Estimates.	Increased to—
Admini trati e department:  Cni f of di i ion.  Clerk.  Clerks (\$1,400).	\$2,400 1,800	\$2,500 1,920	2	
Accounting department: Assistent auditor. Messenger (assistant).	4,000 720	4,500 780		

Note. The resignations during the year of almost all of the older experienced clerks in the appointment did i ion of the administrative department and the heavy volume of work due to the unsettlement of steamship schodules and the labor market in the United States, made necessary the increases in salars and force as abole indicated. The assitunt anditor's salary was increased by cause of the assitument to him of the duties of law clerk in addition to his other duties. This was offset in part by changing the polition of his first and law clerk at 8.2750 to chiefelerk at 82.500. The increase in salary of the massenger (assituant) was offset by the reduction in salary of another similar polition from \$840 to \$780, the changes being made partly to equalize the salaries of the two politions. The total amount allotted for salaries was not exceeded.

## APPENDIX K.

# ACTS OF CONGRESS AND EXECUTIVE ORDERS RELATING TO THE PANAMA CANAL AND TO THE CANAL ZONE.

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### ACTS OF CONGRESS AND EXECUTIVE ORDERS RELATING TO THE PANAMA CANAL AND TO THE CANAL ZONE.

AN ACT To deport certain undesirable aliens and to deny readmission to those deported.

Be it enacted by the Scnate and House of Representatives of the United States of America in Congress assembled, That aliens of the following classes, in addition to those for whose expulsion from the United States provision is made in the existing law, shall, upon the warrant of the Secretary of Labor, be taken into his custody and deported in the manner provided in sections 19 and 20 of the act of February 5, 1917, entitled "An Act to regulate the immigration of aliens to, and the residence of aliens in, the United States," if the Secretary of Labor, after hearing, finds that such aliens are undesirable residents of the United States, to wit:

(1) All aliens who are now interned under section 4067 of the Revised Statutes of the United States and the proclamations issued by the President in pursuance of said section under date of April 6, 1917, November 16, 1917, December 11, 1917, and

April 19, 1918, respectively.

(2) All aliens who since August 1, 1914, have been or may hereafter be convicted of any violation or conspiracy to violate any of the following Acts or parts of Acts,

the judgement on such conviction having become final, namely:

(a) An Act entitled "An Act to punish acts of interference with the foreign relations, the neutrality, and the foreign commerce of the United States, to punish espionage, and better to enforce the criminal laws of the United States, and for other purposes, approved June 15, 1917, or the amendment thereof approved May 16, 1918;

(b) An Act entitled "An Act to prohibit the manufacture, distribution, storage,

use, and possession in time of war of explosives, providing regulations for the safe manufacture, distribution, storage, use, and possession of the same, and for other

purposes," approved October 6, 1917;

(c) An Act entitled "An Act to prevent in time of war departure from and entry

into the United States contrary to the public safety," approved May 22, 1918;
(d) An Act entitled "An Act to punish the willful injury or destruction of war material or of war premises or utilities used in connection with war material, and for

other purposes," approved April 20, 1918;

(e) An Act entitled "An Act to authorize the President to increase temporarily the Military Establishment of the United States," approved May 18, 1917, or any

amendment thereof or supplement thereto;
(f) An Act entitled "An Act to punish persons who make threats against the President of the United States," approved February 14, 1917;
(g) An Act entitled "An Act to define, regulate, and punish trading with the enemy, and for other purposes," approved October 6, 1917, or any amendment

(h) Section 6 of the Penal Code of the United States.

(3) All aliens who have been or may hereafter be convicted of any offense against section 13 of the said Penal Code committed during the period of August 1, 1914, to April 6, 1917, or of a conspiracy occurring within said period to commit an offense under said section 13, or of any offense committed during said period against the Act entitled "An Act to protect trade and commerce against unlawful restraints and monopolies," approved July 2, 1890, in aid of a belligerent in the European war.

That in every case in which any such alien is ordered expelled or excluded from the United States under the provisions of this Act the decision of the Secretary

of Labor shall be final.

Sec. 3. That in addition to the aliens who are by law now excluded from admission into the United States all persons who shall be expelled under any of the provisions of this Act shall also be excluded from readmission.

Approved, May 10, 1920.

AN ACT Making appropriations for fortifications and other works of defense, for the armament thereof, and for the procurement of heavy ordnance for trial and service, for the fiscal year ending June 30, 1921, and for other purposes.

Be it enveted by the Senate and House of Representatives of the United States of America in Congress assembled. That the following sums are appropriated, out of any money in the Treasury not otherwise appropriated, for fortifications and other works of defense, for the armament thereof, and for the procurement of heavy ordnance for trial and service, for the fiscal year ending June 30, 1921, and for other purposes, namely:

#### PANAMA CANAL FORTIFICATIONS.

For fortifications and armament thereof for the Panama Canal:

For maintenance of clearings and trails, \$30,000;

For protection, preservation, and repair of fortifications, of the Panama Canal, including structures erected for torpedo defense, and for maintaining channels for access to torpedo wharves, \$25,000;

For maintenance and repair of searchlights and electric light and power equipment for fortifications, and for tools, electrical and other supplies, and appliances to be

used in their operation, \$20,000;

For the construction of seacoast batteries on the Canal Zone, \$20,000;

For reserve engineer equipment for the fortifications of the Panama ('anal, \$7.500; For the purchase or reclamation of land required for the defenses of the Panama

Canal, \$6,250;

For the construction of fire-control stations, the purchase and installation of accessories therefor, and for subaqueous, sound and flash ranging apparatus, including their development, \$474.000;

For operation and maintenance of fire-control installations at sea-coast defenses,

\$15,000;

For the purchase, manufacture, and test of ammunition for seacoast and land defense cannon, including the necessary experiments in connection therewith, and the

machinery necessary for its manufacture, \$1,000,000;

For the alteration and maintenance and installation of the seacoast artillery, including the purchase and manufacture of machinery, tools, and materials necessary for the work, and expenses of civilian mechanics, and extra-duty pay of enlisted men engaged thereon, \$104,546;

For alteration, maintenance, and repair of submarine mine matériel, \$4,138;

For continuing the construction of barracks, quarters, storehouses, and other buildings necessary for accommodating the Coast Artillery troops to be stationed in the vicinity of the Panama Canal, including water, sewer, and electrical systems, roads, walks, and so forth, \$40,000;

The Governor of the Panama Canal, so far as the expenditure of appropriations contained in this Act may be under his direction, shall purchase needed materials, supplies, and equipment from available surplus stocks of the War Department;

For the purchase, manufacture, maintenance, operation, and repair of airships and other aerial machines, buildings, for equipment, and other accessories necessary in the Air Service for use in connection with the seacoast defenses of the Panama Canal, \$100;

For the establishment, construction, enlargement, or improvement of the aviation station at France Field, Canal Zone, for use in connection with the seacoast defenses of the Panama Canal, including the acquisition of land or any interest in land by purchase, lease, condemnation, or otherwise, and the preparation necessary to make the same suitable for the purpose intended, and for the acquisition and improvement of emergency landing fields in the Canal Zone, \$239,000.

In all, specifically for fortifications and armament thereof for the Panama Canal,

\$1,985,534.

Sec. 2. That all material purchased under the provisions of this Act shall be of American manufacture except in cases when, in the judgment of the Secretary of War, it is to the manifest interest of the United States to make purchases abroad, which

material shall be admitted free of duty.

Sec. 3. That except as expressly otherwise authorized herein no part of the sums appropriated by this Act shall be expended in the purchase from private manufacturers of any material at a price in excess of 25 per centum more than the cost of manufacturing such material by the Government, or, where such material is not or has not been manufactured by the Government, at a price in excess of 25 per centum more than the estimated cost of manufacture by the Government.

Sec. 4. That expenditures for carrying out the provisions of this Act shall not be made in such manner as to prevent the operation of the Government arsenals at their

most economical rate of production, except when a special exigency requires the operation of a portion of an arsenal's equipment at a different rate: Provided, That no part of the appropriations made in this Act shall be available for the salary or pay of any officer, manager, superintendent, foreman, or other person having charge of the work of any employee of the United States Government while making or causing to be made with a stop watch or other time-measuring device a time study of any job of any such employee between the sturting and completion thereof, or of the movements of any such employee while engaged upon such work.

Sec. 5. That no part of the moneys appropriated in each or any section of this Act shall be used or expended for the purchase or acquirement of any article or articles that at the time of the proposed acquirement can be manufactured or produced in each or any of the Government arsenals of the United States for a sum less than it

can be purchised or procured otherwise.

Sec. 6. That all orders or contracts for manufacture of material pertaining to approved projects, which are placed with arsenals or other ordnance establishments and which are chargeable to armament of fortifications appropriations, shall be considered as obligations in all respects in the same manner as provided for similar orders

placed with commercial manufacturers.

Sec. 7. That whenever any Government bureau or department procures, by purchuse or manufacture, stores or materials of any kind, or performs any service for another bureau or department, the funds of the bureau or department for which the stores or materials are to be procured or the service performed may be placed subject to the requisitions of the bureau or department making the procurement or performing the service for direct expenditure: Provided, That funds so placed with the procuring bureau shall remain available for a period of two years for the purposes for which the allocation was made unless sooner expended;

Sec. 8. That the following unexpended balances, or portions of the unexpended balances, or combined unexpended balances or portions of combined unexpended balances of appropriations for fortifications and other works of defense, as set forth in this section, shall be carried to the surplus fund and covered into the Treasury

immediately upon the approval of this Act, namely:

Sea walls and embankments, Panama Canal, \$3,000.

Submarine mine structures, \$15.200. Armament of fortifications, Panama Canal, \$2,306,481.73.

Submarine mines, Panama Canal, \$231,082.21.

Approved, May 21, 1920.

AN ACT Making appropriations for the legislative, executive, and judicial expenses of the Government for the fiscal year ending June 30, 1921, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the following sums are appropriated, out of any money in the Treasury not otherwise appropriated, in full compensation for the service of the fiscal year ending June 30, 1921, namely:

NAVY DEPARTMENT.

HYDROGRAPHIC OFFICE.

Contingent expenses of branch offices at Boston, New York, Fhiladelphia, Baltimore, Norfolk, Savannah, New Orleans, San Francisco, Fortland (Oregon), Fortland (Maine), Chicago, Cleveland, Buffalo, Duluth, Sault Sainte Marie, Seattle, Fanama, and Galveston, including furniture, fuel, lights, works, and periodicals relating to hydrography, marine meteorology, navigation, surveying, oceanography, and terrestrial magnetism, stationery, miscellaneous articles, rent, and care of offices, care of time balls, car fare and ferriage in visiting merchant vessels, freight and express charges, telegrams, and other necessary expenses incurred in collecting the latest information for pilot charts, and for other purposes for which the offices were established, \$15,000.

SEC. 6. That all civilian employees of the Governments of the United States and the District of Columbia who receive a total of compensation at the rate of \$2,500 per annum or less, except as otherwise provided in this section, shall receive, during the fiscal year ending June 30, 1921, additional compensation at the rate of \$240 per annum: Provided, That such employees as receive a total of annual compensation at a rate more than \$2,500 and less than \$2,740 shall receive additional compensation at such a rate per annum as may be necessary to make their salaries, plus their additional compensation, at the rate of \$2,740 per annum, and no employee shall receive additional compensation under this section at a rate which is more than 60 per centum of the rate of the total annual compensation received by such employee: Provided further, That the increased compensation at the rate of \$240 per annum for the fiscal year ending June 30, 1920, shall not be computed as salary in construing this section: Provided further, That where an employee in the service on June 30, 1919, has received during the fiscal year 1920, or shall receive during the fiscal year 1921, an increase of salary at a rate in excess of \$200 per annum, or where an employee, whether previously in the service or not, has entered the service since June 30, 1919, whether such employee has received an increase in salary or not, such employees shall be granted the increased compensation provided herein only when and upon the certification of the person in the legislative branch or the head of the department or establishment employing such persons of the ability and qualifications personal to such employees as would justify such increased compensation: Provided further, That the increased compensation provided in this section to employees whose pay is adjusted from time to time through wage boards or similar authority shall be taken into consideration by such wage boards or similar authority in adjusting the pay of such employees.

The provisions of this section shall not apply to the following: Employees paid from

The provisions of this section shall not apply to the following: Employees paid from the postal revenues and sums which may be advanced from the Treasury to meet deficiencies in the postal revenues; employees of the Panama Canal on the Canal

Zone;

Approved, May 29, 1920.

AN ACT Making appropriations for the Department of Agriculture for the fiscal year ending June 30, 1921.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the following sums be, and they are hereby, appropriated, out of any money in the Treasury of the United States not otherwise appropriated, in full compensation for the fiscal year ending June 30, 1921, for the purposes and objects hereinafter expressed, namely:

DEPARTMENT OF AGRICULTURE.

WEATHER BUREAU.

General Expenses, Weather Bureau: For carrying into effect in the District of Columbia and elsewhere in the United States, in the West Indies, in the Ianama Canal, the Caribbean Sea, and on adiacent coasts, in the Hawaiian Islands, in Bermuda, and in Alaska, the provisions of an Act approved October 1, 1890, so far as they relate to the weather service transferred thereby to the Department of Agriculture, \* \* \* \*;

Total for Weather Bureau, \$1,876,550.

Approved, May 31, 1920.

 ${\bf AN~ACT~Making~appropriations~for~thc~Diplomatic~and~Consular~Service~for~thc~fiscal~year~ending~June~30,\,1921.}$ 

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the following sums be, and they are hereby, severally appropriated, in full compensation for the Diplomatic and Consular Service for the fiscal year ending June 30, 1921, out of any money in the Treasury not otherwise appropriated, for the objects hereinafter expressed, namely:

#### PAYMENT TO THE GOVERNMENT OF PANAMA.

To enable the Secretary of State to pay to the Government of Γanama the ninth annual payment, due on February 26, 1921, from the Government of the United States to the Government of Γanama under article 14 of the treaty of November 18, 1903, \$250,000.

RELIEF AND PROTECTION OF AMERICAN SEAMEN.

Relief and protection of American seamen in foreign countries, and in the Panama Canal Zone, and shipwrecked American seamen in the Territory of Alaska, in the Hawaiian Islands, Forto Rico, and the Philippine Islands, \$100,000.

Approved, June 4, 1920.

AN ACT To remove a certain tract or lots of land in Cristobal, Canal Zone, from the operation and effect of the Executive order of the President of December 5, 1912, pursuant to the Act of Congress of August 24, 1912 (Thirty-seventh Statutes, chapter 390, page 565).

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the following tract of land situated within the Canal Zone, and more particularly described as lots numbered six hundred and forty-one, six hundred and forty-three, six hundred and forty-five, and six hundred and forty-seven, in the town of Cristobal, Canal Zone, the same being bounded on the north by Eleventh Street, on the east by Bolivar Street, on the south by lot numbered six hundred and forty-nine, and on the west by a vacant lot, the said lots or tract of land having an extension from north to south of one hundred and twenty feet and from east to west of one hundred feet, and measuring in superficial area twelve thousand square feet, be, and the same is hereby, withdrawn from the operation and effect of the Act of Congress approved August 24, 1912, known as the Panama Canal Act (Thirty-seventh Statutes, chapter 390, page 565), and the subsequent Executive order of the President, issued pursuant to the said Act of Congress under date of December 5, 1912.

SEC. 2. The Fanama Railroad Company is hereby authorized to sell, transfer, and convey said lots or tracts of land with all improvements thereon to any other person or persons or association of persons and retain the consideration therefor for its own use.

Approved, June 5, 1920.

AN ACT Making appropriations for sundry civil expenses of the Government for the fiscal year ending June 30, 1921, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the following sums are appropriated, out of any money in the Treasury not otherwise appropriated, for the fiscal year ending June 30, 1921, namely:

WAR DEPARTMENT.

QUARTERMASTER CORPS.

National Cemeteries: \* \* \* Disposition of remains of officers, soldiers, and civilian employees: For interment, cremation (only upon request from relatives of the deceased), or preparation and transportation to their homes or to such national cemeteries as may be designated by proper authority, in the discretion of the Secretary of War, of the remains of officers, cadets, United States Military Academy, including acting assistant surgeons and enlisted men in active service, and accepted applicants for enlistment; interment, or preparation and transportation to their homes, of the remains of civil employees of the Army in the employ of the War Department who die abroad, in Alaska, in the Canal Zone, or on Army transports, \* \* \* \$21,549,000: Provided, That the above provisions shall be applicable in the cases of officers and enlisted men on the retired list of the Army who have died or may hereafter die while on active duty by proper assignment and also to citizens

of the United States who may have died while serving in the armies of the Allies associated with the American forces: Provided further, That, in addition to the foregoing sum, the unobligated balance of the appropriation "Disposition of Remains of Officers, Soldiers, and Civil Employees," for the fiscal year 1920 is made available during the fiscal year 1921 for the care and maintenance of graves of officers, soldiers, and civilian employees of the Army abroad, and for the preparation and shipment of their remains to their homes, or to national cemeteries: Provided further, That there may be expended from and after the approval of this Act and until June 30, 1921, from this appropriation and the appropriation for this purpose for the fiscal year 1920, a total amount not exceeding \$250,000 for personal services in the Cemeterial Division, Office of the Quartermaster General, War Department, for compiling, recording, preparing, and transmitting data incident to the disposition of the remains referred to herein; this sum may be expended notwithstanding the third proviso of the paragraph entitled "Temporary employees, War Department," contained in the Legislative, Executive, and Judicial Appropriation Act for the fiscal year 1921.

### DEPARTMENT OF THE INTERIOR.

#### SAINT ELIZABETHS HOSPITAL.

For support, clothing, and treatment in Saint Elizabeths Hospital of the insane from the Army, Navy, Marine Corps, Coast Guard, inmates of the National Home for Disabled Volunteer Soldiers, persons charged with or convicted of crimes against the United States who are insane, all persons who have become insane since their entry into the military and naval service of the United States, civilians in the quartermaster's service of the Army, persons transferred from the Canal Zone, who have been admitted to the hospital and who are indigent, \* \* \* \$1,000,000; \* \* \*

### DEPARTMENT OF COMMERCE.

#### COAST AND GEODETIC SURVEY.

Field expenses: For surveys and necessary resurveys of the Atlantic and Gulf coasts of the United States, including the coasts of outlying islands under the jurisdiction of the United States: *Provided*, That not more than \$45,000 of this amount shall be expended on the coasts of said outlying islands, and the Atlantic entrance to the Panama Canal, \$104,000;

#### THE PANAMA CANAL.

For every expenditure requisite for and incident to the maintenance and operation, sanitation, and civil government of the Panama Canal and Canal Zone, including the following: Compensation of all officials and employees, including \$1,000 additional compensation to the Auditor for the War Department for extra services in auditing accounts for the Panama Canal; foreign and domestic newspapers and periodicals; law books not exceeding \$500, textbooks and books of reference; printing and binding, including printing of annual report; rent and personal services in the District of Columbia; purchase or exchange of typewriting, adding, and other machines; purchase or exchange, maintenance, repair, and operation of motor-propelled and horse-drawn passenger-carrying vehicles; claims for damages to vessels passing through the locks of the Panama Canal, as authorized by the Panama Canal Act; claims for losses of or damages to property arising from the conduct of authorized business operations; claims for damages to property arising from the maintenance and operation, sanitation, and civil government of the Panama Canal; acquisition of land and land under water, as authorized in the Panama Canal Act; expenses incurred in assembling, assorting, storing, repairing, and selling material, machinery, and equipment heretofore or hereafter purchased or acquired for the construction of the Panama Canal which are unserviceable or no longer needed, to be reimbursed from the proceeds of such sales; expenses incident to conducting hearings and examining estimates for appropriations on the Isthmus; expenses incident to any emergency arising because

of calamity by flood, fire, pestilence, or like character not foreseen or otherwise provided for herein; per diem allowance in lieu of subsistence when prescribed by the Governor of the Panama Canal, to persons engaged in field work or traveling on official business, pursuant to section 13 of the Sundry Civil Appropriation Act approved August 1, 1914; and for such other expenses not in the United States as the Governor of the Panama Canal may deem necessary best to promote the maintenance and operation, sanitation, and civil government of the Panama Canal, all to be expended under the direction of the Governor of the Panama Canal and accounted for as follows:

For maintenance and operation of the Panama Canal, salary of the governor, \$10,000; purchase, inspection, delivery, handling, and storing of material, supplies, and equipment for issue to all departments of the Panama Canal, the Panama Railroad, other branches of the United States Government, and for authorized sales, payment in lump sums of not exceeding the amounts authorized by the injury compensation Act approved September 7, 1916, to alien cripples who are now a charge upon the Panama Canal by reason of injuries sustained while employed in the construction of the Panama Canal, \$7,531.851, together with all moneys arising from the conduct of business operations authorized by the Panama Canal Act;

For sanitation, quarantine, hospitals, and medical aid and support of the insane and of lepers, and aid and support of indigent persons legally within the Canal Zone, including expenses of their deportation when practicable, and including additional compensation to any officer of the United States Public Health Service detailed with

the Panama Canal as chief quarantine officer, \$850,000;

For civil government of the Panama Canal and Canal Zone, salaries of district judge \$7,500, district attorney \$5,000, marshal \$5,000, and for gratuities and necessary clothing for indigent discharged prisoners, \$900,000;

In all, \$9,281,851, to be available until expended.

Except in cases of emergency, or conditions arising subsequent to and unforeseen at the time of submitting the annual estimates to Congress, and except for those employed in connection with the construction of permanent quarters, offices, and other necessary buildings, dry docks, repair shops, yards, docks, v harves, v arehouses, storehouses, and other necessary tacilities and appurtenances for the purpose of providing coal and other materials, labor, repairs, and supplies, and except for the permanent operating organization under v hich the compensation of the various positions is limited by section 4 of the Panama Canal Act, there shall not be employed at any time during the fiscal year 1921 under any of the foregoing appropriations for the Panama Canal, any greater number of persons than are specified in the notes submitted, respectively, in connection with the estimates for each of said appropriations in the annual Book of Fstimates for said year, nor shall there be paid to any such person during that fiscal year any greater rate of compensation than was authorized to be paid to persons occupying the same or like positions on July 1, 1919; and all employments made or compensation increased because of emergencies or conditions os arising shall be specifically set forth, with the reasons therefor, by the governor in his report for the fiscal year 1921.

In addition to the foregoing sums there is appropriated, for the fiscal year 1921 for expenditures and reinvestment under the several heads of appropriation aforesaid without being covered into the Treasury of the United States, all moneys received by the Panama Canal from services rendered or materials and supplies furnished to the United States, the Panama Railroad Company, the Canal Zone government, or to their employees, respectively, or to the Panama Government, from hotel and hospital supplies and services; from rentals, wharfage, and like service: from labor, materials, and supplies and other services furnished to vessels other than those passing through the Canal, and to others unable to obtain the same elsewhere; from the sale of scrap and other by-products of manufacturing and shop operations; from the sale of obsolete and unserviceable materials, supplies, and equipment purchased or acquired for the operation, maintenance, protection, sanitation, and government of the canal and Canal Zone; and any net profits accruing from such business to the Panama Canal shall annually be covered into the Treasury of the United States.

In addition there is appropriated for the operation, maintenance, and extension of water works, sewers, and pavements in the cities of Panama and Colon, during the fiscal year 1921, the necessary portions of such sums as shall be paid as water

rentals or directly by the Government of Panama for such expenses.

SEC. 2. That all sums appropriated by this Act for salaries of officers and employees of the Government shall be in full for such salaries for the fiscal year 1921, and all laws or parts of laws to the extent they are in conflict with the provisions of this Act are repealed.

Sec. 4. Any journal, magazine, periodical, or similar publication which is now being issued by a department or establishment of the Government may, in the discretion of the head thereof, be continued, within the limitation of available appropriations or other Government funds, until June 30, 1921, when, if it shall not have been specifically authorized by Congress before that date, such journal, magazine, periodical, or similar publication shall be discontinued.

of any typewriting machines by sale, exchange, or as part payment for another typewriter, that has been used less than three years.

Approved, June 5, 1920.

AN ACT Making appropriations for the support of the Army for the fiscal year ending June 30, 1921, and for other purposes.

Be it enacted by the Senate and House of Representative of the United States of America in Congress assembled, That the following sums be, and they are hereby, appropriated, out of any money in the Treasury not otherwise appropriated, for the support of the Army for the year ending June 30, 1921:

# MEDICAL DEPARTMENT.

### MEDICAL AND HOSPITAL DEPARTMENT,

For the manufacture and purchase of medical and hospital supplies, including disinfectants, for military posts, camps, hospitals, hospital ships and transports, for laundry work for enlisted men and Army nurses while patients in a hospital, and supplies required for mosquito destruction in and about military posts in the Canal Zone, \$3,500,000:

# HOSPITAL CARE, CANAL ZONE GARRISONS.

For paying the Panama Canal such reasonable charges, exclusive of subsistence, as may be approved by the Secretary of War for caring in its hospitals for officers, enlisted men, military prisoners, and civilian employees of the Army admitted thereto upon the request of proper military authority, \$60,000: Provided, That the subsistence of the said patients, except commissioned officers, shall be paid to said hospitals out of the appropriation for subsistence of the Army at the rates provided therein for commutation of rations for enlisted patients in general hospitals.

Approved. June 5, 1920.

AN ACT Making appropriations to supply deficiencies in appropriations for the fiscal year ending June 30, 1920, and prior fiscal years, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the following sums are appropriated, out of any money in the Treasury not otherwise appropriated, to supply deficiencies in appropriations for the fiscal year ending June 30, 1920, and prior fiscal years, and for other purposes, namely:

#### DEPARTMENT OF STATE.

### FOREIGN INTERCOURSE.

Relief and protection of American seamen in foreign countries, and in the Panama Canal Zone, and shipwrecked American seamen in the Territory of Alaska, in the Hawaiian Islands, Porto Rico, and the Philippine Islands, \$35,000.

### GOVERNMENT PRINTING OFFICE.

Hereafter the head of each department and independent establishment of the Government shall on the first day of each regular session submit in writing a report to the Congress giving the aggregate number of the various publications it has issued during the preceding fiscal year giving same in detail, and shall also report the cost of paper used for such publications, cost of printing and the cost of preparation of each publication, and the number of each which has been distributed.

SEC. 5. That this Act hereafter may be referred to as the "Third Deficiency Act. fiscal year 1920."

Approved, June 5, 1920.

### EXECUTIVE ORDER.

ORDER OF JULY 12, 1919, AMENDING RULES AND REGULATIONS PROMULGATED UNDER THE EXECUTIVE ORDER OF AUGUST 8, 1918, ISSUED IN PURSUANCE OF AN ACT OF CONGRESS APPROVED THE 22ND DAY OF MAY, 1918, ENTITLED "AN ACT TO PRE-VENT IN TIME OF WAR DEPARTURE FROM AND ENTRY INTO THE UNITED STATES CONTRARY TO THE PUBLIC SAFETY," WITH SPECIAL REFERENCE TO THE WAIVER OF UNITED STATES CITIZENS' IDENTITY CARDS AND PERMITS TO DEPART FOR CER-TAIN CITIZENS AND ALIENS WHO WISH TO TRAVEL BETWEEN THE CONTINENTAL United States and The Panama Canal Zone.

1, Frank L. Polk, Acting Secretary of State of the United States of America, acting under and by virtue of the authority vested in me by Sections 1 and 39, of the above mentioned rules and regulations as amended by Paragraph III of the Executive Order of March 3, 1919, do hereby prescribe the following exceptions and additions to the said rules and regulations, with special reference to Title 2, Section 11-A.

SECTION 1. Citizens of the United States and other persons owing allegiance to the

United States, including employees of the Panama Canal and Panama Railroad, traveling between the continental United States and the Canal Zone or between the insular possessions of the United States and the Canal Zone shall not be required to bear passports, identity cards, or permits. Co-belligerents and neutrals may make the same journeys on passports issued, renewed, or visaed, by their respective Government authorities within sixty days of the date of departure, without permits. Hostile aliens shall continue to bear passports and permits to depart.

Section 2. The foregoing amendments supersede all existing rules and regulations

in conflict therewith.

FRANK L. POLK, Acting Secretary of State.

DEPARTMENT OF STATE, Washington. July 12, 1919.

### Proclamation

### ABROGATING REGULATIONS GOVERNING THE FLYING OF CIVILIAN AIRCRAFT.

Whereas, under and by virtue of the authority vested in me by the Constitution of the United States as Commander-in-Chief of the Army and Navy of the United States and of the militia of the several States when called into actual service of the United States, I declared and established as a war measure by proclamation No. 1432 of February 28, 1918, rules and regulations governing flying by aircraft within the whole of the United States and its territorial waters and of the insular possessions and of the Panama Canal Zone, declaring said territory a zone of military operation and of military preparation;

And whereas, the necessity, as a war measure, for the continuance in effect of said

rules and regulations has come to an end, now therefore;
1, WOODROW WILSON, President of the United States of America, do hereby proclaim to all whom it may concern that the Presidential proclamation No. 1432 of February 28, 1918, and the rules and regulations therein contained and the power and authority therein and thereby conferred upon military and naval commanders and forces are hereby abrogated, withdrawn and annulled from and after the date hereof. In Witness Whereof I have hereunto set my hand and caused the seal of the

United States to be affixed.

DONE in the District of Columbia this thirty-first day of July, in the year of our [SEAL.] Lord one thousand nine hundred nineteen and of the independence of the United States the one hundred and forty-fourth.

WOODROW WILSON.

By the President: ROBERT LANSING Secretary of State.

[No. 1532.]

### EXECUTIVE ORDER.

In pursuance of the authority conferred upon the President of the United States by section 2 of the act approved August 18,1914, entitled "An Act to provide for the admission of foreign-built ships to American registry for the foreign trade, and for

other purposes," it is hereby ordered:

That the provisions of law requiring survey, inspection and measurement, by officers of the United States, of foreign-built ships admitted to United States registry under said Act are hereby suspended so far and for such length of time as is herein provided, namely: The said provisions shall not apply to any such foreign-built ship during the period of eighteen months from September 1, 1919, provided the Secretary of Commerce is satisfied in the case of any such ship that the ship is safe and seaworthy and that proper effort is being made to comply with the said provision.

WOODROW WILSON.

THE WHITE HOUSE, 8 August, 1919.

[No. 3142.]

### EXECUTIVE ORDER.

Whereas the following Joint Resolution adopted by Congress was approved by the

President May 12, 1917:

"Joint Resolution Authorizing the President to take over for the United States the possession and title of any vessel within its juridisction, which at the time of coming therein was owned in whole or in part by any corporation, citizen, or subject of any nation with which the United States may be at war, or was under register of any such

nation, and for other purposes.

"Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That the President be, and he is hereby, authorized to take over to the United States the immediate possession and title of any vessel within the jurisdiction thereof, including the Canal Zone and all territories and insular possessions of the United States except the American Virgin Islands, which at the time of coming into such jurisdiction was owned in whole or in part by any corporation, citizen, or subject of any nation with which the United States may be at war when such vessel shall be taken, or was flying the flag of or was under register of any such nation or any political subdivision or municipality thereof; and, through the United States Shipping Board, or any department or agency of the Government, to operate, lease, charter, and equip such vessel in any service of the United States, or in any commerce, foreign or coastwise.

"Sec. 2. That the Secretary of the Navy be, and he is hereby, authorized and directed to appoint, subject to the approval of the President, a board of survey, whose duty it shall be to ascertain the actual value of the vessel, its equipment, appurtenances and all property contained therein, at the time of its taking, and to make a written report of their findings to the Secretary of the Navy, who shall preserve such report with the records of his department. These findings shall be considered as converted a vidence in all precedings on any claim for compensation."

competent evidence in all proceedings on any claim for compensation.'

AND WHEREAS from time to time during the period of the war, vessels which were at the time of coming into the jurisdiction of the United States owned in whole or in part by a corporation, citizen or subject of the Empire of Germany, a nation with which the United States is now at war, or vessels which were flying the flag or under the register of the Empire of Germany or of a political subdivision or municipality thereof, or of any nation with which the United States is at war, have been taken over and

operated by the United States or in the service of the United States.

Now Therefore, the possession and title of the United States in all such vessels is taken over in accordance with Joint Resolution adopted by Congress and approved by the President May 12, 1917.

WOODROW WILSON.

THE WINTE HOUSE, November 24, 1919.

[No. 3176.]

### EXECUTIVE ORDER

Amending Section 3 of the Executive Order of February 2, 1914, Pro-VIDING CONDITIONS OF EMPLOYMENT FOR THE PERMANENT FORCE FOR THE PANAMA CANAL.

By virtue of the authority vested in me by law, Section 3 of an Executive Order providing conditions of employment for the permanent force of the Panama Canal, issued February 2, 1914, is hereby amended so as to read as follows:

3. The compensation and conditions of employment of persons employed in the United States will be specified in the appointments. The compensation of such persons will begin upon date of embarkation at port of departure from the United States, and they will be granted free transportation from port of departure, including meals on the steamer, but no compensation or expenses for the journey to the port; but former employees from the United States whose services were terminated other than on account of reduction of force, and whose next preceding service with the Panama Canal was less than one year, shall be paid only from date of entry into the service on the Isthmus, and will be allowed only such reduced rates of transportation to the Isthmus as may be available for government employees. Employees appointed at an hourly rate will be paid for the period of transit to the Isthmus on the basis of an eight-hour day exclusive of Sundays. Except in case of discharge or other separation from the service beyond the employee's control, payment of salary from date of embarkation to date of arrival on the Isthmus will not be made unless service on the Isthmus continues for thirty days.

This order shall take effect on and after this date.

WOODROW WILSON.

THE WHITE HOUSE, 25 November, 1919.

[No. 3182.]

## EXECUTIVE ORDER.

The area of land hereinafter described, to be known as Quarry Heights Reser-VATION, situated in the Canal Zone, is hereby set apart and assigned to the uses and purposes of a military reservation under the jurisdiction of the Secretary of War; but the said area shall be subject to the civil control and jurisdiction of the Governor of the Panama Canal, in conformity with the Panama Canal Act.

The boundaries of said reservation are described as follows:

The point of beginning is a brass plug in concrete monument #10; which is N. 1° 51′ W., 711.4 feet, more or less, from Ancon triangulation station; the coordinates of Ancon station are Lat. 8°-57′ plus 2572.76 feet, Long. 79°-33′ plus 883.66 feet; thence,

1. S. 76°-06′ E., 833 feet, more or less, to a brass plug in concrete monument #11; thence,

2. S. 12°-40′ E., 500 feet, more or less, to a brass plug in concrete monument #1; thence,

3. S. 55°-39' E., 546 feet, more or less, to a copper plug in concrete monument

#2; thence,
4. Along a line parallel with and 5.60 feet back from the curb line of the westerly side of Fourth of July Avenue, to a copper plug in concrete monument #3; direct bearing and distance, #2 to #3, S. 38°-19′ W., 1369 feet, more or less; thence,

5. Along a line parallel with and 5.60 feet back from the curb line of the northerly side of the continuation of Fourth of July Avenue towards East Balboa, to monument #4, which is a copper plug set in the concrete roadway leading to the Truck Company barracks; direct bearing and distance, #3 to #4, S. 87°-03' W., 1080 feet, more or less; thence,

6. N. 74°-03′ W., 505 feet, more or less, to a brass plug in concrete monument

#5; thence,
7. N. 18°-09′ E., 214 feet, more or less, to a brass plug in concrete monument #6;

8. Along the contour of 150 feet elevation to a brass plug in concrete monument #7; direct bearing and distance, #6 to #7, N. 3°-27′ W., 867 feet, more or less; thence,

- 9. Along the contour of 150 feet elevation to a brass plug in concrete monument #8; direct bearing and distance, #7 to #8, N. 48°-21′ W., 569 feet, more or less; thence,
- 10. Along the contour of 150 feet elevation to a brass plug in concrete monument #9; direct bearing and distance, #8 to #9, N. 39°-36′ E., 971 feet, more or less; thence, 11. S. 75°-58′ E., 861 feet, more or less, to the point of beginning.

All bearings refer to the true meridian.

THE WHITE HOUSE,

22 December, 1919.

WOODROW WILSON.

[No. 3202.]

## EXECUTIVE ORDER.

The area of land hereinafter described, to be known as Fort William D. Davis Reservation, consisting of two parcels, situated in the Canal Zone, is hereby set apart and assigned to the uses and purposes of a military reservation, under the jurisdiction of the Secretary of War; but said area shall be subject to the civil control and jurisdiction of the Governor of the Panama Canal in conformity with the Panama Canal Act

The boundaries of said reservation are described as follows:

The boundary of the first parcel (east of the Panama Railroad) begins at a copper plug, set in the east curb of the New Gatun road, 100 feet easterly from center line of the Panama Railroad, the coordinates of whose position are Lat. 9°-16' plus 4519.0 feet,

the Panama Kaliroad, the coordinates of whose postion are Lat. 9—10 plus 4519.0 feet, Long. 79°-55′ plus 207.7 feet; thence.

1. Northeasterly along a road to an iron rail monument, at intersection of two roads, in Lat. 9°-16′ plus 4661.3 feet, Long. 79°-54′ plus 5819.2 feet; thence.

2. N. 20°-25′ W., 232.4 feet, along a road to a 1½″ g. i. pipe monument, in Lat. 9°-16′ plus 4879.0 feet. Long. 79°-54′ plus 5900.3 feet; thence,

3. Northeasterly along a road to a 1½″ g. i. pipe monument, on west side of road, in Lat. 9°-16′ plus 5028.0 feet, Long. 79°-54′ plus 5522.0 feet; thence,

4. Easterly along a line parallel with and 100 feet northerly from spur track to Agua Clara Beservair to a 14″ g. i. pipe monument, at intersection with Agua Clara bound-

Clara Reservoir to a 1½" g. i. pipe monument, at intersection with Agua Clara boundary, in Lat. 9°-16′ plus 4733.5 feet, Long. 79°-54′ plus 4806.6 feet; thence,

ary, in Lat. 9°-16′ plus 4733.5 feet, Long. 79°-54′ plus 4806.6 feet; thence,
5. N. 49°-54′ E., 2044.0 feet along Agua Clara Reservoir boundary to a monument,
in Lat. 9°-17′ plus 2.6 feet, Long. 79°-54′ plus 3243.1 feet; thence,
6. N. 50°-41′ E., 542.6 feet, to a monument, on the boundary of Agua Clara Reservoir,
in Lat. 9°-17′ plus 356.4 feet, Long. 79°-54′ plus 2823.2 feet; thence,
7. S. 87°-57′ E., 2517.8 feet, to a monument, on the boundary of Agua Clara Reservoir, in Lat. 9°-17′ plus 266.2 feet, Long. 79°-54′ plus 307.0 feet; thence,
8. S. 87°-10′ E., 1873.3 feet, to a monument, on the boundary of Agua Clara Reservoir, in Lat. 9°-17′ plus 173.6 feet, Long. 79°-53′ plus 4443.9 feet; thence,
9. S. 87°-48′ E., 719.8 feet, to a monument, on the boundary of Agua Clara Reservoir, in Lat. 9°-17′ plus 146.0 feet, Long. 79°-53′ plus 3724.6 feet; thence,
10. S. 87°-38′ E., 478.9 feet, to a monument, on the boundary of Agua Clara Reservoir, in Lat. 9°-17′ plus 126.2 feet, Long. 79°-53′ plus 3246.1 feet; thence,
11. S. 87°-25′ E., 1394.0 feet, to a 1½″ g. i. pipe monument, 100 feet west of Panama Railroad track and opposite transmission tower 10-5, in Lat. 9°-17′ plus 63.2 feet, Long. 79°-53′ plus 1853.5 feet; thence,
12. Northerly and easterly along a line parallel with and 100 feet distant from Panama Railroad track, to the shore of Gatun Lake; thence,

ama Railroad track, to the shore of Gatun Lake; thence,

13. Northerly along the shore of said lake to a  $1\frac{1}{2}$  g. i. pipe monument, in Lat. 9°-17' plus 4789.3 feet, Long. 79°-52' plus 4765.5 feet; thence,

14. N. 89°-57′ W., 1377.2 feet, to a 14″ g. i, pipe monument, cemented into rock bottom of small stream, in Lat. 9°-17' plus 4790.6 feet, Long. 79°-53' plus 135.1 feet: thence,

15. S. 89°-58′ W., 1388.8 feet, to a 1½″ g. i. pipe monument, on the west bank of a small stream, in Lat. 9°-17′ plvs 4789.7 feet, Long. 79°-53′ plvs 1523.9 feet; thence, 16. S. 89°-56′ W., 518.1 feet, to a 1½″ g. i. pipe monument, on a hill, in Lat. 9°-17′ plvs 4789.1 feet, Long. 79°-53′ plus 2042.0 feet; thence, 17. S. 89°-53′ W., 553.9 feet, to a 1½″ g. i. pipe monument, on a hill, in Lat. 9°-17′ plvs 4789.1 feet, 1879.1 feet,

plus 4788.0 feet, Long. 79°-53′ plus 2595.9 feet; thence,
18. S. 89°-10′ W., 301.3 feet, to a 1½″ g. i. pipe monument, in Lat. 9°-17′ plus

4783.2 feet, Long. 79°-53' plys 2897.2 feet; thence,

19. S. 75°-05' W., 4760.8 feet, to a 13" g. i. pipe monument, on a hill, in Lat. 9°-17'

plus 3557.3 feet. Long. 79°-54′ plus 1489.9 feet; thence,
20. S. 75°-05′ W., 728.6 feet, to a bolt, in center of a concrete bridge on old Gatun
road, in Lat. 9°-17′ plus 3370.0 feet. Long. 79°-54′ plus 2193.9 feet; thence,
21. Due west, 410.8 feet. to a ½″ g. i. pipe monument, on north side of old Gatun
road, in Lat. 9°-17′ plus 3370.0 feet, Long. 79°-54′ plus 2604.7 feet; thence,
22. Due west, 1291.3 feet, to a brass plug, set in new concrete road one foot from
west edge, in Lat. 9°-17′ plus 270.0 feet. Long. 79°-54′ plus 2606.6 feet, thence

west edge, in Lat. 9°-17′ plus 3370.0 feet, Long. 79°-54′ plus 3896.0 feet; thence, 23. N. 30°-26′ W., 2074.1 feet, to a ½″ g. i. pipe monument, on the northeasterly

end of the north levee of the Mindi hydraulic fill, in Lat. 9°-17′ plus 5158.3 feet,

Long. 79°-54′ plus 4946.6 feet; thence, 24. Southwesterly along said levee to a 1½″ g. i. pipe monument, on southwesterly end of the levee and 100 feet from center line of Panama Railroad track at transmission bridge, 4-16, in Lat. 9°-17′ plus 4290.5 feet. Long. 79°-55′ plus 531.6 feet; thence, 25. Southerly along a line parallel with and 100 feet casterly from center line of

Panama Railroad track to the point of beginning.

All pipe monuments are painted white and stenciled in black "Mil. Res." where

the boundary lines intersect the sides of the pipe.

The boundary of the second parcel (west of the Panama Railroad) begins at a 13" g. i. pipe monument on the north side of the New Gatun road and 100 feet westerly from center line of the Panama Railroad, in Lat. 9°-16′ plus 4596.2 feet, Long. 79°-55′

plus 395.3 feet; thence,

1. Northerly along a line parallel with and 100 feet westerly from center line of Panama Railroad track to a 1½" g. i. pipe monument, in Lat. 9°-17' plus 4290.5 feet, Long. 79°-55' plus 731.6 feet; thence,

2. N. 85°-58' W., 1000.5 feet, to a 1½" g. i. pipe monument, 500 feet east of the center line of the Canal, on a ridge, in Lat. 9°-17' plus 4360.9 feet, Long. 79°-55'

3. To the Canal bank opposite Canal Station 308 plus 10; thence,

4. Southerly along the Canal to a point opposite the next monument; thence,

5. Easterly to a  $1\frac{1}{2}$  g. i. pipe monument, 125 feet east of the bank of the Canal, in Lat. 9°-17′ plus 1290.6 feet, Long. 79°-55′ plus 2205.9 feet (said monument being 1390 feet north of the north end of the north approach wall of Gatun locks); thence,

6. N. 89°-41′ E., 537.7 feet, to a 1½″ g. i. pipe monument, in Lat. 9°-17′ plus 1293.6 feet, Long. 79°-55′ plus 1668.2 feet; thence.

7. S. 12°-10′ E., 2705.4 feet, to a bolt, set in concrete platform of an oil tank, in Lat. 9°-16′ plus 4696.5 feet, Long. 79°-55′ plus 1098.0 feet; thence,

8. Following the road (direct course and distance S. 87°-02′ E., 533.4 feet) to a 1½″

- g. i. pipe monument, in Lat. 9°-16′ plus 4668.9 feet, Long. 79°-55′ plus 565.6 feet; thence
- 9. Following the road (direct course and distance S. 66°-54′ E., 185.3 feet) to the point of beginning.

All pipe monuments are painted white. All bearings refer to the true meridian.

No structure shall be constructed by the military authorities within two hundred

(200) feet of the present banks of the Canal.

The transfer of the Fort William D. Davis Reservation is made subject to the continued right of the Supply Department of the Panama Canal to use areas not contiguous to barracks or quarters for pasturage of cattle for the supply of beef to the Canal Zone; the pasturage areas, however, to be available for use by the troops when required for military manuevers or for target practice.

WOODROW WILSON.

THE WHITE HOUSE, 22 December, 1919.

### EXECUTIVE ORDER.

The area of land hereinafter described, situated in the Canal Zone, consisting of two parcels, which include Fort Clayton, The Panama Arsenal, The Engineer DEPOT, and the Post of Corozal, is hereby set apart and assigned to the uses and purposes of a military reservation under the jurisdiction of the Secretary of War; but said area shall be subject to the civil control and jurisdiction of the Governor of the Panama Canal, in conformity with the Panama Canal Act.

The boundaries of said reservation are described as follows:

The boundary of the first parcel begins at a 1½" galvanized iron pipe monument, on the Canal Zone boundary line between monuments No. 88 and No. 89, the coordinates of whose position are Lat. 9°-01' plus 6040.5 feet, Long. 79°-31' plus 3587.5 feet; thence,

1. N. 89°-57′ W., 215.4 feet, to a 1½″ g. i. pipe monument, on the west side of a trail, in Lat. 9°-01′ plus 6040.7 feet, Long. 79°-31′ plus 3802.9 feet; thence, 2. N. 89°-57′ W., 251.5 feet, to a 1½″ g. i. pipe monument, on the east bank of a branch of the Rio Abajo, in Lat. 9°-01′ plus 6041.0 feet, Long. 79°-31′ plus 4054.4

feet: thence,

3. N. 89°-57′ W., 1265.7 feet, to a 1½″ g. i. pipe monument, on the east side of the Porto Bello trail, in Lat. 9°-01′ plus 6042.1 feet, Long. 79°-31′ plus 5320.1 feet: thence,

4. N. 89°-57′ W., 838.4 feet, to a 1½″ g. i. pipe monument, on the east side of the Macambo trail, in Lat. 9°-01′ plus 6042.8 feet, Long. 79°-32′ plus 146.1 feet; thence,

Macambo trail, in Lat. 9°-01′ plus 6042.8 feet, Long. 79°-32′ plus 146.1 feet; thence, 5. N. 89°-57′ W., 2051.4 feet, to a 1½″ g. i. pipe monument, on a ridge in Lat. 9°-01′ plus 6044.5 feet, Long. 79°-32′ plus 2197.5 feet; thence, 6. N. 89°-57′ W., 2946.1 feet, to a concrete monument, on a high hill, in Lat. 9°-01′ plus 6047.0 feet, Long. 79°-32′ plus 5143.6 feet: thence, 7. N. 89°-57′ W., 2509.1 feet, to a 1½″ g. i. pipe monument, on a hill, in Lat. 9°-02′ plus 1.7 feet, Long. 79°-33′ plus 1640.6 feet; thence, 8. N. 89°-57′ W., 1363.1 feet, to a 1½″ g. i. pipe monument, on a hill, in Lat. 9°-02′ plus 2.8 feet, Long. 79°-33′ plus 3003.7 feet; thence, 9. N. 89°-57′ W., 1267.7 feet, to a 1½″ g. i. pipe monument, on the east side of a trail running along the east bank of the Rio Cardenas, in Lat. 9°-02′ plus 3.9 feet, Long. 79°-33′ plus 4271 4 feet: thence

Long. 79°-33′ plus 4271.4 feet: thence, 10. N. 89°-57′ W., 200.5 feet, to a concrete monument, on the west bank of the Rio Cardenas, in Lat. 9°-02′ plus 4.0 feet, Long. 79°-33′ plus 4471.9 feet; thence,

11. N. 89°-57′ W., 392.6 feet, to a 1½″ g. i. pipe monument, on a hill, in Lat. 9°-02′ plus 4.4 feet, Long. 79°-33′ plus 4864.5 feet; thence,

12. N. 89°-57′ W., 1255.2 feet, to a 1½″ g. i. pipe monument, in Lat. 9°-02′ plus 5.5

12. N. 89"-51" W., 1235.2 feet, to a 12 g. 1. pipe monument, in Lat. 9"-02" plus 5.6 feet, Long. 79"-34" plus 280.4 feet; thence, 13. N. 89"-57" W., 172.8 feet, to a 1½" g. i. pipe monument, in Lat. 9"-02" plus 5.6 feet, Long. 79"-34" plus 280.4 feet; thence, 14. N. 89"-57" W., 1222.2 feet, to a 1½" g. i. pipe monument, concreted into the rock bed of a branch of the Rio Guanabano, in Lat. 9"-02" plus 6.6 feet, Long. 79"-54" plus 1502.6 feet; thence,

15. N. 89°-57′ W., 885.8 feet, to a 1½″ g. i. pipe monument, on a rocky hill, in Lat. 9°-02′ plus 7.3 feet, Long. 79°-34′ plus 2388.4 feet; thence,

16. N. 89°-57′ W., 2139.5 feet, to a concrete monument, on the west bank of the Rio Guanabano, in Lat. 9°-02′ plus 9.1 feet, Long. 79°-34′ plus 4527.9 feet; thence, 17. N. 89°-57′ W., 1014.4 feet, to a 1½″ g. i. pipe monument, on the west side of the Cruces trail, in Lat. 9°-02′ plus 9.9 feet, Long. 79°-34′ plus 5542.3 feet; thence, 18. N. 89°-57′ W., 1417.8 feet, to a 1½″ g. i. pipe monument, on the west side of a military trail, in Lat. 9°-02′ plus 11.1 feet, Long. 79°-35′ plus 948.0 feet; thence, 10. N. 80° 57′ W. 96° 50′ foot to a concrete monument, on the west hank of the Rio

military trail, in Lat. 9°-02′ plus 11.1 feet, Long. 79°-35′ plus 948.0 feet; thence, 19. N. 89°-57′ W., 965.0 feet, to a concrete monument, on the east bank of the Rio Cameron, in Lat. 9°-02′ plus 11.9 feet, Long. 79°-35′ plus 1913.0 feet; thence, 20. N. 89°-57′ W., 2384.9 feet, to a 1½″ g. i. pipe monument, on the nose of a high hill, in Lat. 9°-02′ plus 13.8 feet, Long. 79°-35′ plus 4297.9 feet; thence, 21. N. 89°-57′ W., 1634.1 feet, to a 1½″ g. i. pipe monument, on a hill, in Lat. 9°-02′ plus 15.2 feet, Long. 79°-35′ plus 5932.0 feet; thence, 22. N. 89°-57′ W., 796.5 feet, to a 1½″ g. i. pipe monument, on the east bank of the Rio Caimitillo, in Lat. 9°-02′ plus 15.9 feet, Long. 79°-36′ plus 716.4 feet; thence, 23. Southerly along center line of the Rio Caimitillo and the center line of an arm of Miraflores Lake, to a couper plug, set in the north curb of the Pedro Miguel-Corozal

of Miraflores Lake, to a copper plug, set in the north curb of the Pedro Miguel-Corozal road, in Lat. 9°-00′ plus 5429.6 feet, Long. 79°-36′ plus 219.8 feet; thence, 24. Southeasterly along this curb of the Pedro Miguel-Corozal road to a copper plug,

in the east curb of the road nearly opposite transmission bridge 42.8 at Miraflores

railroad station, in Lat. 9°-00′ plus 1504.4 feet, Long. 79°-35′ plus 2713.5 feet; thence, 25. S. 35°-38′ E., 47.3 feet, along a 100-foot offset line from the center line between main tracks of the Panama Railroad, to a copper plug, in the westerly curb of the

Pedro Miguel-Corozal road, in Lat. 9°-00' plus 1465.9 fect, Long. 79°-35' plus 2685.9

26. Southerly along a line parallel with and 100 feet easterly from the center line between main tracks of the Panama Railroad to a 1½" g. i. pipe monument, on the boundary of the Corozal Hospital Farm, in Lat. 8°-59' plus 2459.3 feet, Long. 79°-34' plus 5080.9 feet; thence,

27. N. 47°-14' E., 746.5 feet, to the Corozal Hospital Farm Monument No. 10, in

Lat. 8°-59′ plus 2966.2 feet, Long. 79°-34′ plus 4532.8 feet; thence, 28. N. 47°-14′ E., 500.9 feet, to concrete monument No. 9 of the Hospital Farm, on west side of the old Corozal road, in Lat. 8°-59′ plus 3306.3 feet, Long. 79°-34′ plus 4165.1 feet; thence,

29. N. 47°-14′ E., 41.1 feet, to concrete monument No. 8 of the Hospital Farm, on east side of the old Corozal road, in Lat. 8°-59′ plus 3334.2 feet, Long. 79°-34′ plus

4134.9 feet: thence,

30. Northerly along the east edge of the old Corozal road to a copper plug, set in the southeast corner of a concrete bridge over the Rio Cardenas, in Lat. 9°-00′ plus 212.8 feet, Long. 79°-34′ plus 3425.2 feet; thence,

18. S. 43°-34′ plus 3425.2 feet; thence, and shigh hill, in Lat. 8°-59′ plus 5052.0 feet, Long. 79°-34′ plus 2277.6 feet; thence, and shigh hill, in Lat. 8°-59′ plus 5052.0 feet, Long. 79°-34′ plus 2277.6 feet; thence, and shigh hill, in Lat. 8°-59′ plus 4704.5 feet, Long. 79°-34′ plus 1027.4 feet; thence, and shigh hill, in Lat. 8°-59′ plus 4704.5 feet, Long. 79°-34′ plus 1027.4 feet; thence, and shigh hill, in Lat. 8°-59′ plus 1958.1 feet, Long. 79°-34′ plus 616.2 feet; thence, and shigh hill, in Lat. 8°-59′ plus 1958.1 feet, Long. 79°-34′ plus 616.2 feet; thence, and shigh hill, in Lat. 8°-59′ plus 1958.1 feet, Long. 79°-34′ plus 616.2 feet; thence, and shigh hill, in Lat. 8°-59′ plus 1958.1 feet, Long. 79°-34′ plus 616.2 feet; thence, and shigh hill, in Lat. 8°-59′ plus 1958.1 feet, Long. 79°-34′ plus 616.2 feet; thence, and shigh hill, in Lat. 8°-59′ plus 1958.1 feet, Long. 79°-34′ plus 616.2 feet; thence, and shigh hill, in Lat. 8°-59′ plus 1958.1 feet, Long. 79°-34′ plus 616.2 feet; thence, and shigh hill, in Lat. 8°-59′ plus 1958.1 feet, Long. 79°-34′ plus 616.2 feet; thence, and shigh hill, in Lat. 8°-59′ plus 1958.1 feet, Long. 79°-34′ plus 616.2 feet; thence, and shigh hill, in Lat. 8°-59′ plus 1958.1 feet, Long. 79°-34′ plus 616.2 feet; thence, and shigh hill, in Lat. 8°-59′ plus 1958.1 feet, Long. 79°-34′ plus 616.2 feet; thence, and shigh hill, in Lat. 8°-59′ plus 1958.1 feet, Long. 79°-34′ plus 616.2 feet; thence, and shigh hill, in Lat. 8°-59′ plus 1958.1 feet, Long. 79°-34′ plus 616.2 feet; thence, and shigh hill, in Lat. 8°-59′ plus 1958.1 feet, Long. 79°-34′ plus 616.2 feet; thence, and shigh hill, in Lat. 8°-59′ plus 1958.1 feet, Long. 79°-34′ plus 616.2 feet; thence, and shigh hill, in Lat. 8°-59′ plus 1958.1 feet, Long. 79°-34′ plus 616.2 feet; thence, and shigh hill, in Lat. 8°-59′ plus 1958.1 feet, Long. 79°-34′ plus 616.2 feet; thence, and shigh hill, in Lat. 8°-59′ plus 1958.1 feet, Long. thence.

34. S. 47°-14′ W., 1453.7 feet, to a concrete monument, "I. C. C." of the Hospital

Farm, in Lat. 8°-59′ plus 971.3 feet, Long. 79°-34′ plus 1683.7 feet; thence,

35. S. 85°-31′ W., 450.7 feet, to a  $1\frac{1}{2}$ ′′ g. i. pipe monument, in Lat. 8°-59′ plus 936.1

- 35. S. \$5^-31' W., 450.7 feet, to a 1½' g. 1. pipe monument, in Lat. 8 -59 pius 950.1 feet, Long. 79°-34' plus 2133.0 feet; thence,
  36. N. \$0°-42' W., 546.6 feet, along a wire fence to a 1½' g. i. pipe monument, in Lat. 8°-59' plus 1024.4 feet, Long. 79°-34' plus 2672.4 feet: thence,
  37. S. 23°-11' W., 357.3 feet, along a hedge, to a point, at bend of hedge, in Lat. 8°-59' plus 693.4 feet, Long. 79°-34' plus 2813.1 feet; thence,
  38. S. 47°-40' W., 151.1 feet, along a hedge, to a 1½'' g. i. pipe monument, on easterly edge of road in front of chapel, in Lat. 8°-59' plus 591.6 feet, Long. 79°-34' plus 2924.8 feet; thence feet; thence

39. N.  $21^{\circ}$ -04' W., 121.7 feet, to a  $1\frac{1}{2}$ '' g. i. pipe monument, on west side of road to Hospital Farm, in Lat. 8°-59′ plus 705.2 feet, Long. 79°-34′ plus 2968.5 feet; thence,

40. N. 58°-29' W., 258.0 feet, along a hedge, to a 1½" g. i. pipe monument, on west side of the old Corozal road, in Lat. 8°-59' plus 840.1 feet, Long. 79°-34' plus 3188.5 feet; thence,

41. S. 35°-00′ W., 202 feet, to a 1½″ g. i. pipe monument, in Lat. 8°-59′ plus 674.5

feet, Long. 79°-31′ plus 3304.4 feet; thence,
42. N. 41°-06′ W., 550 feet, along northeast curb of the Pedro Miguel-Corozal road, to a copper plug, in curb, in Lat. 8°-59′ plus 1069.5 feet. Long. 79°-34′ plus 3687.2 ieet; thence

43. S.  $37^{\circ}-27'$  W., 192.9 feet, to a  $1\frac{1}{2}''$  g. i. pipe monument, in Lat.  $8^{\circ}-59'$  plus

916.4 feet, Long. 79°-34' plus 3804.5 feet: thence,

44. Southeasterly along a line parallel with and 100 feet northeasterly from the center line between main tracks of the Panama Railroad, to a 12" g. i. pipe monument, at north corner of Army Commissary, in Lat. 8°-59' plus 505.8 feet, Long. 79°-3! plus 3250.7 feet; thence.

45. S. 39°-54′ W., 70 feet, to a 1½″ g, i. pipe monument, at west corner of Army Commissary, in Lat. 8°-59′ plus 452.8 feet, Long, 79°-34′ plus 3295.6 feet; thence, 46. S. 51°-18′ E., 269 feet, along a line parallel with and 30 feet distant from the

center line between main tracks of the Panama Railroad, to a 1½" g. i. pipe monument, in Lat. 8°-59′ plus 284.6 feet. Long. 79°-34′ plus 3085.7 feet; thence,

47. N. 40°-10′ E., 70 feet, to a 1½" pipe monument, on easterly side of Corozal road, in Lat. 8°-59′ plus 338.1 feet, Long. 79°-34′ plus 3040.5 feet; thence.

48. Southerly along a line parallel with and 100 feet easterly from the center line between main tracks of the Panama Railroad, to a copper plug, set in south curb on concrete road to Engineer Supply Depot, in Lat. 8°-58′ plus 4637.4 feet, Long. 79°-34′

1774.6 feet; thence.

49. S. 17°-19′ E., 175.1 feet, to a 1½″ g. i. pipe monument, in front of Signal Corps Supply Depot, in Lat. 8°-58′ plus 4470.2 feet, Long. 79°-34′ plus 1722.5 feet; thence, 50. S. 37°-34′ E., 574.1 feet, to a 1½″ g. i. pipe monument, at north side of corral, in Lat. 8°-58′ plus 4015.1 feet. Long. 79°-34′ plus 1372.5 feet; thence, 51. Southerly along a line parallel with and 100 feet easterly from the center line between point realized the Papagoe Pailtrend to a 1½″ g. in pipe monument, apposite.

between main tracks of the Panama Railroad to a 12" g. i. pipe monument, opposite

transmission bridge 45-2, in Lat. 8°-58′ plus 2213.8 feet, Long. 79°-34′ plus 210.5 feet; thence.

52. Southeasterly along a line parallel with and 15 feet northeasterly from the Miraflores-Balboa water mains to a 2" g. i. pipe monument, in Lat. 8°-57′ plus 5043.3 feet, Long. 79°-33′ plus 3364.3 feet; thence,
53. N. 40°-00′ E.. 2209.3 feet, along a line parallel with and 500 feet northwesterly

from center line between main tracks of the Panama Railroad, to a  $1\frac{1}{2}$  g. i. pipe monument, in Lat. 8°-58' plus 688.3 feet, Long. 79°-33' plus 1944.2 feet; thence,

54. N. 89°-24′ E., 1203.1 feet, along a line parallel with and 500 feet northerly from center line between main tracks of the Panama Railroad, to a copper plug, set in concrete closed conduit over the Rio Corundu, in Lat. 8°-58' plus 700.9 feet, Long, 79°-33′ plus 739.2 feet; thence, 55. Northerly along the Rio Corundu and the Canal Zone boundary to the point

of beginning.

The boundary of the second parcel begins at channel light No. 10 on east bank of

- Panama Canal near P. 1. 2094 plus 98.2; thence, 1. N. 64°-40′ E., 670.1 feet, to a 1½″ g. i. pipe monument, 6 feet southwesterly from southwesterly rail of track to Miraflores Locks at southeasterly end of trestle over Rio Grande Diversion, in Lat. 8°-59′ plus 2350.6 feet, Long. 79°-34′ plus 5890.1 feet;
- 2. S.  $54^{\circ}-10'$  E., 668.5 feet, along railroad embankment to a  $1\frac{1}{2}''$  g. i. pipe monument, 6 feet southwesterly from southwesterly rail at northwesterly end of passing track, in Lat. 8°-59′ plus 1959.2 feet, Long. 79°-34′ plus 5348.1 feet; thence, 3. S. 49°-51′ E., 1289.6 feet, along railroad embankment to a 1½″ g. i. pipe monu-

ment, 6 feet southwesterly from southwesterly rail of spur to lock machinery storage platform, in Lat. 8°-59′ plus 1127.7 feet, Long. 79°-34′ plus 4362.4 feet; thence,

4. S. 23°-52′ E., 351.9 feet to a copper plug, set in northwest corner of the above described concrete platform, in Lat. 8°-59′ plus 805.9 feet, Long. 79°-34′ plus 4220.0

feet; thence.
5. By a curve along west edge of the above described concrete platform to a copper plug set in southwest corner of platform, in Lat. 8°-59' plus 521.4 feet, Long. 79°-34'

plus 4021.8 feet; thence.
6. N. 39°-43′ E., 301.9 feet to a 1½″ g. i. pipe monument, at bottom of railroad cut at transmission bridge 43-18, in Lat. 8°-59′ plus 753.6 feet, Long. 79°-34′ plus 3828.8

feet; thence,
7. Southeasterly along a line parallel with and 45 feet southwesterly from center line between main tracks of the Panama Railroad to a 12" g. i. pipe monument, near spur to Ordnance Depot, in Lat. 8°-58′ plus 5852.3 feet, Long. 79°-34′ plus 2740.7

leet; thence,
8. S. 22°-13′ E., 260.7 feet, to a 1½′′ g. i. pipe monument, in fork between two drainage ditches, in Lat. 8°-58′ plus 5610.9 feet, Long. 79°-34′ plus 2642.1 feet; thence,
9. S. 32°-53′ E., 820.3 feet, along a line parallel with and 100 feet westerly from center line between main tracks of the Panama Railroad, to a 1½′′ g. i. pipe monument, in Lat. 8°-58′ plus 4922.0 feet, Long. 79°-34′ plus 2196.7 feet; thence.
10. N. 57°-13′ E., 62.7 feet, to concrete monument No. 7 on the old Engineer Depot reservation, in Lat. 8°-58′ plus 4955.9 feet, Long. 79°-34′ plus 2143.9 feet; thence,
11. S. 32°-45′ E., 501.0 feet, to concrete monument No. 1 of the Engineer Depot Reservation, in Lat. 8°-58′ plus 4534.5 feet, Long. 79°-34′ plus 1872.9 feet; thence.

- Reservation, in Lat. 8°-58′ plus 4534.5 feet, Long. 79°-34′ plus 1872.9 feet; thence,
- 12. S. 32°-45′ E., 576 feet, to concrete monument No. 2 of the Engineer Depot reservation, in Lat. 8°-58′ plus 4050.1 feet, Long. 79°-34′ plus 1561.3 feet; thence, 13. S. 32°-45′ E., 196.9 feet, to a 1½″ g. i. pipe monument, in Lat. 8°-58′ plus

3884.5 feet, Long. 79°-34' plus 1454.8 feet; thence,

14. Due west to the east bank of the Panama Canal; thence,

Northerly along the east bank of the Panama Canal to the point of beginning.

All bearings refer to the true meridian.

All pipe monuments are painted white and stenciled in black "Mil. Res." where the boundary lines intersect the sides of the pipe.

No structure shall be constructed by the military authorities within two hundred

(200) feet of the present banks of the Canal.

The transfer of the reservation including Fort Clayton, The Panama Arsenal. The Engineer Depot, and the Post of Corozal is made subject to the continued right of the Supply Department of the Panama Canal to use areas not contiguous to barracks or quarters for pasturage of cattle for the supply of beef to the Canal Zone, the pasturage areas, however, to be available for use by the troops when required for military maneuvers or for target practice.

WOODROW WILSON.

THE WHITE HOUSE, 30 December, 1919.

#### EXECUTIVE ORDER

ESTABLISHING REGULATIONS FOR THE CANAL ZONE RELATIVE TO THE SALE, POSSESSION, AND DISPOSITION OF LIQUORS FOR SACRAMENTAL SCIENTIFIC, INDUSTRIAL, PHARMACEUTICAL, AND MEDICINAL PURPOSES.

By virtue of the authority vested in me by Section 20 of the Act of Congress entitled "An Act To prohibit intoxicating beverages, and to regulate the manufacture, production, use and sale of high-proof spirits for other than beverage purposes, and to insure an ample supply of alcohol and promote its use in scientific research and in the development of fuel, dye, and other lawful industries," effective October 28, 1919, I hereby establish the following regulations for the Canal Zone.

Section 1. The Chief Health Officer of The Panama Canal, under the direction of the Governor of The Panama Canal, is hereby authorized and directed to administer

the regulations established hereunder; and he may designate one or more assistants to aid him in the performance of his duties, who shall exercise such powers as the Chief Health Officer may delegate to them from time to time.

Section 2. In conformity with Section 1, Title II, of the above-mentioned Act of Congress, the word "liquor" when used in these regulations, shall be construed to include alcohol, brandy, whiskey, rum, gin, beer, ale, porter and wine, and in addition thereto any spiritous, vinous, malt, or fermented liquors, liquids and compounds, whether medicated, proprietary, patented or not, and by whatever name called, containing one-half of one per cent or more of alcohol by volume, which are fit for use for beverage purposes: *Provided*, That the foregoing definition shall not extend to dealcoholized wine or to any beverage or liquid produced by the process by which beer, ale, porter or wine is produced, if it contain less than one-half of one per cent of alcohol by volume, and is otherwise denominated than as beer, ale, or porter.

In conformity with Section 1, Title III, of the above-mentioned Act of Congress, the term "alcohol" means that substance known as ethyl alcohol, hydrated oxide of ethyl, or spirit of wine, from whatever source or whatever processes produced.

Section 3. No liquors for sacramental purposes shall be imported into the Canal Zone or possessed, used, or disposed of therein for that purpose except upon the written permit of the Chief Health. Officer or his duly authorized assistant. The permit shall not be issued except upon a written application of a priest or other minister of the gospel, rabbi, or official of any religious sect residing within the Canal Zone. The application shall be dated, shall state the name of the applicant in full, his official position, his church or institution, and where it is located, and that he desires to import into the Canal Zone and use the liquors described in the application for sacramental purposes only, giving the quantity thereof, where he is to obtain the same, and how it is to be transported into the Canal Zone. The application shall state that the liquor applied for will be necessary to cover the sacramental use thereof by the applicant's church or congregation for a period of days to be stated in the application, and that he will undertake to the best of his ability to see that none of the liquor applied for shall be used for other than sacramental uses; and he shall also state the quantity, approximately, of any liquor he then has on hand for sacramental purposes. The application shall be signed by the applicant, and shall state his address for shipment purposes.

If, in the opinion of the Chief Health Officer, the application should be granted, he will endorse his approval thereon and sign the same officially and deliver it to the applicant; and the Chief Health Officer shall keep a record of each permit issued by

him or his assistants.

Section 4. No physician in the Canal Zone not employed by the Health Department of the Canal, the Army, Navy, or Public Health Service of the United States. shall be authorized to prescribe liquor to any patient unless the physician holds a permit issued by the Chief Health Officer of The Panama Canal; and all such permits shall be in writing, giving the date of issue, the name and address of the person to whom it was issued, and shall designate and limit the acts which are permitted, and the time and place where such acts may be performed. The permit shall be signed by the Chief Health Officer or his authorized assistant, and shall be delivered to the applicant; and the Chief Health Officer shall keep a record of each permit so issued by him or his assistant. No permit shall be required under this section from a physician in the employ of The Panama Canal, the Army, Navy, or Public Health Service of the United States.

Section 5. No one but a physician, authorized to do so under the preceding section, shall be permitted to prescribe liquors for medicinal purposes in the Canal Zone, and no liquors shall be so prescribed except after careful physical examination of the person for whose use such prescription is sought, or if such examination is found impracticable, then only when upon the best information obtainable the physician believes that

the issue of such liquor to such person is necessary and will afford him relief from some known ailment. A prescription issued bona fide under these regulations shall authorize the person named in the same to use and possess the liquor described in the prescription, and in the quantity and for the time therein stated.

Section 6. No prescription issued by a physician not a resident of the Canal Zone

shall authorize the introduction into the Canal Zone, or the use or possession therein, of any liquor, unless such prescription shall have been approved by the Chief Health

Officer or one of his assistants.

Section 7. No druggist or pharmacist not in the employ of the Health Department of The Panama Canal or the Army, Navy, or Public Health Ser ice of the United States, shall be authorized to issue liquors upon a physician's prescription, unless such druggist or pharmacist holds a written permit from the Chief Health Officer or one of his duly authorized assistants, and then only in the form and manner authorized by such written permit. No permit shall be required under this section from a druggist or pharmacist in the employ of The Panama Canal, or the Army, Navy, or Public Health Service of the United States.

Section 8. No liquors obtained outside of the Canal Zone shall be permitted to enter the Canal Zone, or to be possessed or used therein for sacramental, pharmaceutical, medicinal, industrial or scientific purposes except with the approval of the Chief Health Officer or his assistants and such approval shall not be given unless such officer is satisfied that the liquor is intended to be used for the purposes enumerated in this

section, and in conformity with the law and the regulations.

Section 9. No liquor shall be manufactured for sacramental, medicinal, pharmaceutical, scientific, or industrial purposes, except in the laboratories of The Panama Canal: and no liquors shall be used for sacramental, medicinal, or pharmaceutical purposes except in the manner hereinbefore described; and no liquors shall be used for scientific or industrial purposes except upon authori ation of the Chief Health Officer. The Chief Health Officer is hereby authorized and directed to issue, from time to time, such instructions as are not inconsistent with law, for the manufacture and use of liquors under these regulations.

Section 10. The articles enumerated in this section, after having been manufactured and prepared for market, shall not be subject to the pro isions of these regula-

tions, if they correspond with the following descriptions and limitations, viz:

(a) Denatured alcohol or denatured rum produced and used as provided by the

laws and regulations of the United States, now or hereafter in force.

(b) Medi inal preparations manufactured in accordance with formulas prescribed by the United States Pharmacopeia, National Formulary, or the American Institute of Homeopathy that are unfit for use for beverage purposes.

(c) Patented, patent, and proprietary medicines that are unfit for use for beverage

purposes.
(d) Toilet, medicinal, and antiseptic preparations and solutions that are unfit for use for beverage purposes.

(e) Flavoring extracts and sirups, that are unfit for use as a beverage, or for intoxi-

cating beverage purposes.

(f) Vinegar and preserved sweet cider.

The manufacture and preparation of such said articles, however, shall be subject to

such conditions as the Chief Health Officer may impose.

SECTION 11. The Chief Health Officer may from time to time require any and all persons having in their possession any liquor for sacramental, medicinal, pharmaceutical, scientific, or industrial purposes, to submit a statement to him showing the amount of such liquor in their possession; and he is hereby authorized to issue from time to time such instructions as he may deem necessary to fully carry out these regulations, including instructions regarding the use of liquors by veterinarians employed by The Panama Canal and other departments of the Government of the United States.

Section 12. Each and every violation of any of the provisions of these regulations shall be punished by a fine of not more than \$1,000 and imprisonment of not exceeding six months for a first offense, and by a fine of not less than \$200 or more than \$2,000 and imprisonment of not less than one month nor more than five years for a second and subsequent offense, to be imposed by the District Court of the Canal Zone.

SECTION 13. These regulations shall be effective from and after this date.

WOODROW WILSON.

THE WHITE HOUSE, 7 January, 1920.

#### Executive Order.

An Executive order concerning costs and security for costs in the district court and the magistrates' courts in the Panama Canal Zone.

By virtue of the authority vested in me by "An Act to provide for the opening, maintenance, protection and operation of The Panama Canal, and the sanitation and government of the Canal Zone," approved Aug 1st 24, 1912, known as the "Panama Canal Act," I hereby establish and prescribe the following rules of practice to govern the District Court and the Magistrates' Courts in the Panama Canal Zone:

Section I. Each party to any civil suit instituted in the District Court or any Magistrate court of the Canal Zone shall be responsible for the costs incurred by him in such suit, and the murshal, constable or other officer, authorized to execute any process in such cases, shall not execute the same unless the fees allowed by law for the service of such process shall be paid in advance by the party seeking such process, unless such party to the suit is entitled to prosecute the same in forma pauperis, as

hereinafter provided.
Section II. The plaintiff in every civil case in the District Court shall deposit with the clerk thereof a docket fee of ten dollars in cash and every plaintiff instituting a suit in the Magistrate courts shall deposit a docket fee in said court of five dollars; and the sait shall not be filed by the clerk or the magistrate unless the said docket fec is paid in the manner herein provided. The monies to be deposited shall be applied to the payment of costs as they accrue.

Section III. Any party to a civil case in the District Court, who demands a trial by jury, shall accompany said demand with a deposit of ten dollars as a jury fee; and

unless such deposit is made, the case shall be tried without the intervention of a jury.

Section IV. The plaintiff in any civil suit or proceedings in the District Court or in either of the Magistrate courts may be ruled to give security for the costs upon motion of the opposing party or of any officer of the court interested in the costs accruing in said suit; and it shall be the duty of the court to require the plaintiff to give such security for costs within a reasonable time thereafter and not later than ten days after the motion is presented to the court; and if the plaintiff shall fail to comply with the order of the court within the time prescribed by the court or judge thereof, the suit shall be dismissed.

Section V. A new or additional undertaking may be ordered, within such time as the court or judge may prescribe, upon proof that the original undertaking is insufficient security, and failure on the part of the plaintiff to comply with the order of the court, or judge, within the time prescribed, shall cause the dismissal of the stit.

The security for costs required by this section may consist of a money deposit, bond

of a surety company, or cost hand with two or more good and sufficient sureties; the form of such security to be determined by the judge or magistrate of the court before whom the proceedings are pending. If personal security is furnished, the sureties must be residents of the Canal Zone, and no officer of the court or attorney practicing before the court shall be accepted as surety.

Section VI. All bonds given as security for costs shall authorize judgment against all of the obligors of the said bonds, jointly and severally, for such costs, to be entered

in the final judgment of the case or special proceedings.

Section VII. Any citizen of the United States, entitled to commence any suit or action in any court in the Canal Zone, may commence and prosecute or defend to conclusion any such suit or action, without being required to prepay fees or costs or give security therefor, before or after bringing such suit or action, upon filing in the said court a statement, under oath, in writing, that because of his poverty he is unable to pay the costs of said suit or action, or to give security for same, and that he believes that he is entitled to the redress he seeks by such suit or action, and setting forth the nature of the said cause of action.

The opposing party in the suit, the clerk of the District Court or his assistant, or the magistrate, as the case may be, may contest the inability of the party to pay costs or his inability to furnish security for same; and the contest shall be heard at

such time as the court or magistrate may determine.

If no contest is made upon the affidavit, or if the same is admitted by the court or magistrate after the contest, it shall be the duty of the officers of the court thereafter to issue and serve all processes and perform all duties on behalf of such party as in other cas. s.

Section VIII. No security for costs shall be required of the United States, The Panama Canal, or any of its dependencies or from the public administrator of The

Panama Canal.

Section IX. The provisions of this order, relating to security for costs, shall apply to an intervenor; and shall also apply to a defendant who seeks a judgment against the plaintiff on a counterclaim, after the defendant shall have discontinued his suit.

Section X. When the costs are secured by the provisions of an attachment or other bond, filed by the party required to give satisfactory security for costs, no further security shall be required.

Section XI. This order shall apply to pending cases in the District Court and the

Magistrate courts.

Section XII. Costs shall ordinarily be allowed to the prevailing party as a matter of course, but the court shall have power for special reasons to adjudge that either party shall pay the costs of an action, or that the same be divided as may be equitable.

Section XIII. The Executive Order of August 14, 1914, "To Require Security for Costs in Civil Cases." and all other laws, orders and decrees, or parts thereof, in conflict with this order, are hereby repealed.

Section XIV. This order shall take effect thirty days from this date.

WOODROW WILSON.

THE WHITE HOUSE, 9 January, 1920.

[No. 3213.]

### EXECUTIVE ORDER.

By direction of the President, it is ordered:

That, effective February 2, 1920, Homer A. A. Smith, who has been appointed a member of the Joint Commission for the appraisement and settlement of damages to property in the Canal Zone, in accordance with the provisions of Articles Six and Fifteen of the Convention between the United States and Panama, concluded November 18, 1903, be allowed Twenty-five (\$25) Dollars per day for his services, including all expenses: *Provided*, That he shall be granted free transportation over the Panama Railroad and such other transportation as may be necessary when traveling on official business on the Isthmus; he shall also be allowed the ordinary privileges of Government employees on the Isthmus, including employees' rates at the hotels of The Panama Canal or the Panama Railroad Company on the Isthmus.

In consideration of the fact that Mr. Smith will resign his position as Auditor of

The Panama Canal to accept appointment as member of the Joint Commission, it is further ordered that upon the termination of such service Mr. Smith shall be reinstated to the position of Auditor of The Panama Canal without disturbance of his continuous service status; and he shall also have the right to leave carned during his present service year after reinstatement as Auditor of The Panama Canal.

BENEDICT CROWELL, Acting Secretary of War.

WAR DEPARTMENT, Washington, D. C., January 30, 1920.

### EXECUTIVE ORDER.

Under authority of the Act of Congress, Chapter 78, Section 2, approved May 20, 1918, Executive Order No. 3091, dated May 24, 1919, is hereby amended so as to include The Panama Canal.

WOODROW WILSON.

THE WHITE HOUSE, 3 February, 1920.

[No. 3222.]

The following Executive Order No. 3091 is made applicable to The Panama Canal by the above order.

EXECUTIVE ORDER.

Under authority of the Act of Congress, Chapter 78, Section 2, approved May 20, 1918, it is hereby ordered that the Secretary of the Navy be and he hereby is authorized to transfer any or all vessels, boats, and auxiliary ships of the Navy classified as yachts, colliers, transports, tenders, supply ships, hospital ships, submarine chasers, patrol boats, motor boats, fishing vessels, and special types built, purchased or commandeered for a substantial consideration by the Navy subsequent to the declaration of Congress by joint resolution approved April 6, 1917, that war exists between the United States and Germany, and provided said vessels were built, purchased, or commandeered for the purposes of said war, and any other Executive Department of the Government is desirous of securing from the Navy Department such vessels, boats, and auxiliary ships, or any of them, which are, in the opinion of the Secretary of the Navy, not necessary for the needs of the Navy, upon such terms as may be agreed to by the Executive Head of such Department and the Secretary of the Navy.

It is hereby further ordered that the Secretary of the Navy may in his discretion and upon such terms as may be agreed to by him and the Executive Head of any Executive Department desirous of obtaining same, transfer the materials and equipment of vessels, boats, and auxiliary ships of the Navy as above described, said materials and equipment consisting of masts, bowsprits, boats, anchors, tackle furniture, and all other necessaries appertaining and belonging to such vessels boats, and auxiliary ships.

WOODROW WILSON.

THE WHITE HOUSE.

24 May, 1919.

[No. 3091.]

## EXECUTIVE ORDER.

AUTHORIZING CHARGES FOR SERVICES RENDERED BY THE QUARANTINE DIVISION OF THE PANAMA CANAL.

By virtue of the authority vested in me, I hereby establish the following order for the Canal Zone:

I. The Governor of The Panama Canal is hereby authorized to establish, from time to time, a schedule of charges to cover services rendered by the Quarantine Division of The Panama Canal in the disinfection of vessels and their cargoes, for the transportation and subsistence of passengers while in quarantine, for placing guards aboard vessels when necessary, and for the inspection of vessels outside of the regular hours; which charges shall be paid to The Panama Canal by the person or interest receiving

II. The ordinance of the Isthmian Canal Commission, enacted August 5, 1911, and approved by the Secretary of War August 22, 1911, "Providing for night quarantine inspection of vessels at the port of Colon," and all other laws, orders and regulations

in conflict with this order are hereby repealed.

III. This order shall take effect from and after this date.

WOODROW WILSON.

THE WHITE HOUSE, 11 February, 1920.

[No. 3226.]

## EXECUTIVE ORDER.

ESTABLISHING A MAXIMUM RATE OF PAY FOR ALIEN EMPLOYEES OF THE PANAMA CANAL AND THE PANAMA RAILROAD COMPANY ON THE ISTHMUS OF PANAMA.

By virtue of the authority vested in me by the Panama Canal Act, approved August 24, 1912, it is hereby ordered:

I. That the Executive Order of February 2, 1914, be so amended that paragraphs 6 and 20 thereof shall read as follows:

PARAGRAPH 6.

All employees who receive compensation at the rate of more than \$960 a year or 40 cents an hour, must be citizens of the United States or the Republic of Panama, and such citizens will be given preference for employment in all grades. Aliens may not be employed in such grades unless (a) they have occupied similar positions during the construction of the Canal for two years or more, or (b) in case of emergency, in which latter case they must be replaced by citizens of the United States or Republic of Panama as early as practicable.

#### PARAGRAPH 20.

All employees who are citizens of the United States, and aliens whose compensation is at a rate of more than \$960 a year or 40 cents an hour, shall be entitled to leave privileges.

II. This Order shall take effect on and after this date.

WOODROW WILSON.

THE WHITE HOUSE, 20 February, 1920.

[No. 3232.]

#### EXECUTIVE ORDER.

The area of land hereinafter described situated in the jurisdiction of the Canal Zone is hereby set apart and assigned to the uses and purposes of a radio station, and other naval purposes, under the control of the Secretary of the Navy; but the said area shall be subject to the civil jurisdiction of the Canal Zone authorities in conformity with the Panama Canal Act. The said area is described as follows:

#### PUNTA MALA NAVAL RADIO STATION.

The said radio station is part of the tract of land heretofore set apart for the uses and purposes of the Punta Mala Lighthouse of The Panama Canal, and comes within the

following metes and bounds:

Commencing at the southermost point of the said Radio Station, which point is designated on the blueprint herewith attached numbered 6030-2, dated June 18, 1919, and signed O. E. Malsbury, Assistant Engineer, as Point "B." and is marked by a concrete monument; thence north seventy degrees, ten minutes, thirty-one seconds (N 70° 10′ 31″) west, five hundred and seventy-eight feet (578′) more or less, to a concrete monument at the intersection of this line with the western boundary of the Punta Mala Lighthouse Reservation, designated on said blueprint with the letter "D"; thence north (true) six hundred and ten feet (610'), more or less, to the intersection with the low water shore line of the cove at the northern end of the Reservation. The line then follows the shore line of the cove to the northern end of the small point, thence following the low water shore line in a southerly direction until the point "F," shown on the blueprint, is reached. The line then runs south sixty-one degrees, three minutes, twenty-nine seconds (S 61° 03′ 29″) west, a distance of five hundred and eightynine and five tenths feet (589.5') to the place of beginning marked "B" on the said blueprint. The total area of the Radio Station is approximately thirteen and seven tenths (13.7) acres.

The shelter cove at the northern boundary of the Radio Station which is used at high tide for landing supplies for the lighthouse as well as the Radio Station, shall be available for use of both the Lighthouse and Radio services, and a right of way is hereby allowed to Punta Mala Lighthouse service through the Naval Reservation for the purpose of transporting supplies to and from the Lighthouse Reservation and the said

landing.

WOODROW WILSON.

THE WHITE HOUSE, 1 March, 1920.

[No. 3237.]

### Executive Order.

### CARRYING AND KEEPING OF ARMS.

By virtue of the authority vested in me by Section 4 of the Act of Congress, authorizing the President to make rules and regulations relative to police powers in the Canal Zone, approved August 21, 1916, I hereby establish the following order for the Canal Zone.

Section I. It shall be unlawful for any one to carry on or about his person any firearm or any dirk, dagger or other knife, manufactured or sold for the purpose of offense or defense, or any slung shot, sword-cane, or any knuckles made of metal or

other hard substance.

SEC. II. The preceding section shall not apply to a person engaged in the military or naval service of the United States, or a as peace officer or officer authorized to execute judicial process of the United States or the Canal Zone, or in carrying mail or in the collection or custody of funds of the United States or the Canal Zone; nor to a member of a gun or pistol club organized for the promotion of target practice, a certifed copy of the constitution and by-laws of which have been approved by the Executive Secretary of The Panama Canal and filed with the Chief of the Police and Fire Division, when such member is going to or from a target range or is engaged in practice at the target range. For the purposes of this order, a certificate of membership in the gun or pistol club shall be issued by the organization and approved by the Chief of the Police and Fire Division, which shall entitle the holder to carry firearms as is provided in this section.

Neither shall the preceding section apply to any person authorized to have or carry

arms by permit granted under the terms of this order.

Sec. 111. The Executive Secretary of The Panama Canal may authorize the granting of permits to have and carry arms, as follows:

1. To hunt upon the public lands of the Canal Zone or upon lands occupied by pri-

vate persons, when authorized by the latter.

2. To have arms in residences, offices, business places, and plantations, and to watchmen or overseers of plantations, factories, warehouses, docks or piers. Applications for such permits shall be made to the Executive Secretary of The Panama Canal, and shall contain the full name, residence and occupation of the applicant; and if the applicant is a minor it shall not be granted without the consent of his parent

or guardian; but no permit shall be granted to a minor under 15 years of age.

The Executive Secretary shall satisfy himself by due inquiry that the applicant is a proper person to have a permit to keep and carry arms; and he may grant or deny

the application, as to him may seem proper.

SEC. IV. When an application is granted by the Executive Secretary for a permit to hunt, he shall endorse his approval thereon and file the application, and he shall

cause a permit to be issued to the applicant upon his paying a fee of \$1.

Hunting permits issued by virtue of this order will allow the holder thereof to have, carry, and use firearms in the area or areas prescribed by the Governor of The Panama Canal, and on the conditions imposed by him under such general or special rules and regulations as he may issue from time to time. And the Governor is hereby empowered to designate the area or areas of the Canal Zone in which hunting is permitted, and the class of arms that may be used in hunting in such areas; and no hunting shall be allowed outside of the areas so designated by him. And the Governor of The Panama Canal may, in such general or special rules and regulations, impose such other conditions in respect to hunting as he may deem necessary in the interests of public order, and to prevent injury to persons or property.

A permit granted under this section shall run for the fiscal year in which it is issued, and it may be revoked at any time for cause by the Executive Secretary of The Panama

Canal.

SEC. V. Permits heretofore issued by authority of law, to have and use firearms, shall not be affected by this order, but such permits shall continue in force until the

expiration of the period for which they were issued.

Sec. VI. Any one not authorized by this order, who carries on or about his person any of the prohibited arms mentioned in Section I of this order, or who hunts or engages in hunting without first obtaining the permit provided for in this order, or who after obtaining such permit engages in hunting in violation of the provisions of this order or any rule or regulation established by the Governor hereunder, shall be punished by a fine not exceeding twenty-five dollars or by imprisonment in jail not to exceed thirty days, or by both such fine and imprisonment, in the court's discretion.

In addition to the punishment herein prescribed for a violation of this order, the courts shall adjudge the seizure and confiscation of the arms unlawfully had, used, or carried by the offending party, and the same shall be disposed of in such manner as the Executive Secretary of The Panama Canal shall determine.

SEC. VII. Penalties for the infringement of this order shall be in addition to such punishment as may be imposed upon the offending person for any other offense that he may have committed in connection with the carrying or using of arms in violation of this order.

SEC. VIII. The Executive Order of November 7, 1913, and all other laws, orders and regulations or parts thereof in conflict with this order are hereby repealed.

SEC. IX. This Order shall take effect thirty days from and after this date.

WOODROW WILSON.

THE WHITE HOUSE, 6 March, 1920.

[No. 3243.]

### EXECUTIVE ORDER

ESTABLISHING MARITIME QUARANTINE REGULATIONS FOR THE CANAL ZONE AND HARBORS OF THE CITIES OF PANAMA AND COLON, REPUBLIC OF PANAMA.

By virtue of the authority vested in me by law, and in conformity with Article VII of the Panama Canal treaty between the United States of America and the Republic of Panama, dated November 18, 1903, I hereby establish the following maritime quarantine regulations for the Canal Zone, and for the harbors of the cities of Panama and Colon, Republic of Panama.

#### SECTION I.

The Division of Quarantine of the Panama Canal shall continue under the jurisdiction of the Health Department of the Panama Canal, subject to the supervision of the Governor of the Panama Canal.

#### SECTION II.

#### BILLS OF HEALTH.

Masters of vessels clearing from any foreign port or from any port in the possessions or other dependencies of the United States, or touching at any of the said ports, for a port in the Canal Zone or for the port of Panama or Colon, Republic of Panama, or for passage through the Panama Canal, must obtain a bill of health in duplicate from the officer or officers authorized by the quarantine laws and regulations in the United States to sign such certificates for vessels entering the ports of the United States.

### SECTION III.

Vessels clearing from a foreign port for a port in the United States or one of their possessions or dependencies, and touching at any port of the Canal Zone, or the port of Panama or Colon, Republic of Panama, or for passage through the Panama Canal, shall not be required to obtain an additional bill of health under these regulations; but bills of health so obtained for entry into ports of the United States shall be presented upon arrival at any port of the Canal Zone or at the port of Panama or Colon, as the case may be, for the inspection of the Quarantine Officer of the Panama Canal.

### SECTION IV.

Masters of vessels clearing from ports of the United States for ports of the Canal Zone or the port of Panama or Colon, Republic of Panama, or for passing through the Panama Canal, must obtain a port sanitary statement signed by the officer authorized under the laws of the United States to issue such statements, and must present such statement to the Quarantine Officer of the Panama Canal.

#### SECTION V.

### RULES TO BE OBSERVED AT FOREIGN PORTS.

1. The officer issuing a bill of health at a foreign port or a port in any possession or other dependency of the United States shall satisfy himself, by inspection if necessary, that the conditions as certified to by him in said bill of health are true, and he is hereby authorized to withhold the bill of health to said vessel unless these regulations are complied with; and he shall note upon the face of the bill of health any additional facts that may guide the quarantine officer of the Panama Canal, in order that the latter may impose such restrictions as he may deem necessary on account of the insufficiency of the precautions taken at the port of departure of the vessel, or that he may allow such concessions as he may deem proper on account of the precautions taken at such port of departure.

2. Inspection is required of all vessels from ports in which cholera, yellow fever, or

plague in men or rodents, prevails, or at which smallpox or typhus fever prevails in epidemic form and at which a medical officer is detailed.

3. The inspection required by this section is such an examination of the vessel, cargo, passengers, crew, personal effects of same, including the examination of manifests and other papers, food and water supply and the ascertainment of its relations with the shore, the manner of loading and possibilities of invasion by rats and insects as will enable the inspecting officer to determine if these regulations have been complied with.

4. The examination shall be made by daylight, as late as practicable before the ship sails. The vessel must be inspected before the passengers go aboard. The passengers shall be inspected just before embarkation, and the crew shall be inspected on the deck of the vessel; and no communication shall be had with the vessel after

such inspection except by permission of the officer issuing the bill of health.

5. Before a bill of health is issued to a vessel having on board or having had on board a case of quarantinable disease or the infecting agents of any disease adequate

measures must be taken to remove such infection.

6. Vessels must be mechanically clean in all their parts, especially the holds, forecastle and steerage, prior to storing cargo therein or receiving passengers thereon. Any portion of the vessel liable to have been infected by any quarantinable disease must be mechanically cleaned, and all bedding, linen, clothing, utensils and other articles that may have been used or soiled by the sick person must be removed and sterilized before the issuance of a bill of health.

7. Nothing containing organic refuse shall be taken as ballast from any port.

8. Bedding which has been used, upholstered furniture, wearing apparel, personal effects, and second-hand articles of a nature similar to those incorporated in this section, which the consular or medical officer has reason to believe have been soiled or that may carry lice, fleas, bed bugs, or other vermin, should be treated to correct this condition prior to shipment. Any article of the class mentioned in this paragraph, which can not be rendered clean and free from vermin, should not be shipped.

9. Passengers should avoid embarking, as far as possible, at a port where a quarantinable disease prevails; and communication between the vessel and the shore must be reduced to a minimum at ports where a quarantinable disease prevails, and the personnel of the vessel must remain on board during their stay in such port. No person suffering from a quarantinable disease shall be allowed to take passage on a vessel, except lepers with proper authority returning to their native country.

10. Passengers and crew, merchandise and baggage, coming from an infected locality, but shipped at an uninfected port, must submit to the same restrictions as

are imposed at an infected port before being allowed to ship.

#### SECTION VI.

## LOCAL RULES FOR INSPECTIONS.

1. The following vessels arrived at ports of the Canal Zone or the port of Panama or Colon, Republic of Panama, shall be inspected by the quarantine officer of the port prior to the vessel's entry:

(a) Vessels from foreign ports and from ports of the United States and their depend-

encies;

(b) Vessels with sickness on board; (c) Vessels from Panamanian ports where quarantinable disease prevails;

(d) Vessels from Panamanian ports carrying passengers or articles suspected by the quarantine officers of conveying the infection of a communicable disease;

(e) Vessels from Panamanian ports having touched at a foreign port since the last

quarantine inspection.

2. Every vessel subject to quarantine inspection shall be considered in quarantine until granted free pratique, and such vessel shall fly a yellow flag from the foremast head from sunrise to sunset, and shall observe all the other requirements of vessels actually quarantined.

3. The master of a vessel in quarantine shall allow no communication with his vessel except as is provided in these regulations, nor shall any water craft approach

within 200 meters of such vessel.

4. No person or article of any kind shall be allowed to leave a vessel in quarantine

except with the consent of the quarantine officer.

5. If a boat of any kind has communication with a vessel in quarantine, such boat and its personnel shall be subjected to such measures of quarantine as the quarantine officer may judge to be necessary.

6. No person other than the quarantine officers shall go aboard any vessel subject to quarantine until such vessel has been granted pratique, provided, however, that this section shall not apply to pilots, customs officers and admeasurers, while on duty; nor shall it apply to the agent of the vessel, if such agent has the consent of the quar-

antine officer to go aboard of such vessel.

7. The quarantine officer shall decide whether such vessel, or its personnel or passengers, or any article aboard of such vessel is liable to convey any of the following disease: Plague, yellow fever, cholera, smallpox, typhus fever, leprosy, or such other disease as may from time to time be declared to be quarantinable by the Governor of the Panama Canal; and if the quarantine officer is of the opinion that such vessel is liable to convey any of the said diseases, he shall place the vessel in quarantine, and shall forbid the entry of the said vessel until the vessel, in his judgment, is no longer liable to convey any such disease; and he shall take such measures in respect to the vessel, its passengers, personnel or cargo as in his judgment may be required to prevent the introduction of such disease into the Canal Zone or into the cities of Panama and Colon, Republic of Panama.

8. Every case of sickness aboard any vessel in the harbors of the Canal Zone or in the port of Panama or Colon shall be immediately reported by the master of the vessel

to the quarantine officer.

#### SECTION VII.

#### GENERAL RULES.

Quarantine stations for the detention of passengers and others undergoing quarantine under these regulations shall be established and maintained at such places as may be fixed by the Governor of the Panama Canal from time to time: but the present quarantine stations of the Panama Canal shall continue until changed in conformity with the provisions of this section.

Quarantine inspections shall be made at the places and hours as may be fixed by the Governor from time to time; and he may, when necessary, designate quarantine

anchorages to be used exclusively for quarantined vessels.

#### SECTION VIII.

In the discretion of the Chief Health Officer of the Panama Canal, passengers boarding vessels at ports subject to quarantine under these regulations may be required to present, upon their arrival at any port of the Canal Zone or the ports of Panama or Colon, to the quarantine officer, personal certificates from the officer authorized by these regulations to sign bills of health, which certificates should certify to the passenger's sanitary condition and history, provided, however, that due notice shall be given to the agents of the steamship company on the Isthmus of Panama that such certificates will be required.

SECTION IX.

The Chief Quarantine Officer shall have charge of the sanitation of the harbors of the Canal Zone and of the harbors of Panama and Colon, Republic of Panama, and vessels lying therein, and shall see that such measures are enforced as are necessary for the proper hygiene of vessels, their cargoes and personnel, whether in port or en route, and to prevent the vessels or their personnel from being a source of danger to other vessels or to the port. And he is hereby authorized to certify bills of health to vessels clearing from ports under his jurisdiction, setting forth in such bill of health the conditions of the port, vessel, its cargo, passengers and crew; and he is authorized, at the request of the master of any vessel, to disinfect the same and otherwise place such vessel in a sanitary condition so that it may leave the port with a clean bill of health and be able to make entry at the port of destination without further disinfection or detention in quarantine.

SECTION X.

The Governor of the Panama Canal is hereby authorized to establish a schedule of charges from time to time to cover services rendered by the quarantine division of the Panama Canal in the disinfection of vessels, their cargoes, for the transportation and subsistence of passengers while in quarantine, for placing guards aboard vessels when necessary, and for the inspection of vessels outside of regular hours, which charges shall be paid to the Panama Canal by the person or interest receiving such service.

#### SECTION XI.

A certificate from the quarantine officer shall be required of every vessel subject to inspection, as a prerequisite for the customs entry or passage through the Canal of such vessel; and any instructions written into this certificate shall be binding upon the vessel and shall be observed by all persons. The certificate provided for by this section shall be in either of the following terms:

(a) That the vessel has complied with all the quarantine regulations and is entitled

to free pratique;
(b) That the vessel is allowed to proceed under certain conditions and is entitled to conditional pratique.

SECTION XII.

Persons detained in quarantine under these regulations shall not be permitted to go outside of the limits of the quarantine station without permission of the quarantine officer, and if any such person shall leave the quarantine station without such permission he may be taken into custody by the quarantine officer wherever found and returned to the quarantine station, and for this purpose the quarantine officer may call upon the police for assistance.

No person except the Chief Health Officer of the Panama Canal or his representatives, the quarantine officers and employees and personnel of the station shall be permitted to enter in or upon a quarantine station without permission from a quar-

antine officer of the Panama Canal.

#### SECTION XIII.

The medical officers of the Panama Canal, duly clothed with authority to act as quarantine officers at any port within the Canal Zone and the ports of the cities of Panama and Colon, Republic of Panama, when discharging the duties of quarantine officers are hereby authorized to administer oaths and take declarations in matters relating to the administration of the quarantine laws or regulations of the Panama Canal.

#### SECTION XIV.

The Governor of the Panama Canal is hereby authorized to prescribe, from time to time, the form of bill of health, sanitary statement, or other forms required or made necessary by these regulations, and to issue from time to time such general or special instructions, not inconsistent with these regulations, as he may deem necessary to the due enforcement of these regulations.

### SECTION XV

Any person failing to observe the requirements of these regulations or of any instructions issued by the Governor of the Panama Canal in conformity with these regulations, shall be punished by a fine not exceeding five hundred dollars or by imprisonment in jail not exceeding ninety days, or both such fine and imprisonment at the discretion fo the Court, in conformity with the Act of Congress authorizing the establishment of these regulations.

#### SECTION XVI.

All laws, orders and regulations, or parts thereof, in conflict with this order are hereby repealed.

SECTION XVII.

These regulations shall take effect thirty days from and after this date.

WOODROW WILSON.

THE WHITE HOUSE, 31 March, 1920.

[No. 3255.]

### EXECUTIVE ORDER.

The areas hereinafter described respectively as Fort Randolph Reservation, France Field Reservation and Coco Solo Reservation, situated within the Canal Zone, are hereby set apart and assigned as follows: Fort Randolph and France Field to the uses and purposes of military reservations, to be under control of the Secretary of War: and Coco Solo to the uses and purposes of a naval reservation, to be under the control of the Secretary of the Navy. All the above areas, however, shall be subject to the civil jurisdiction of the Canal Zone authorities in conformity with the Panama Canal Act.

The said areas are described as follows:

### FORT RANDOLPH RESERVATION.

Beginning at a 2" g. i. pipe monument on the shore of Manzanillo Bay, on the west side of Fort Randolph branch, Panama Railroad, 22.5 feet from center line of track, geodetic coordinates of which monument are Lat. 9°–22′ plus 4674.1 feet, Long. 79°–52′ plus 5764.7 feet (this monument is also monument "C" on the boundary of the Naval Aviation and Submarine Base), thence South 12°–15′ East paralleling the railroad a distance of 874.6 feet to a 2" g. i. pipe monument, the geodetic coordinates of which are Lat. 9°–22′ plus 3819.4 feet, Long. 79°–52′ plus 5579.1 feet, thence South 77°–45′ West a distance of 335.6 feet to a concrete monument whose geodetic coordinates are Lat. 9°–22′ plus 3748.2 feet, Long. 79°–52′ plus 5907.0 feet, thence South 12°–45′ East a distance of 79.8 feet to a concrete monument the geodetic coordinates of which are Lat. 9°–22′ plus 3670.4 feet, Long. 79°–52′ plus 5889.4 feet, thence North 81°–37′ East a distance of 336.0 feet to a 2" g. i. pipe monument the geodetic coordinates of which are Lat. 9°–22′ plus 3719.4 feet, Long. 79°–52′ plus 5557.4 feet, thence again along a

line parallel to and 22.5 feet west of center line of track to a concrete monument inside a 4" C. I. pipe the geodetic coordinates of which are Lat. 9°-21' plus 3547.5 feet, Long. 79°-52′ plus 5061.6 feet, (this monument being also monument "A" of the Naval Aviation and Submarine Base); thence South 81°-56′ E. a distance of 5106.8 feet to a  $1\frac{1}{2}$ ' g. i. pipe monument the geodetic coordinates of which are 9°-21' plus 2830.6 feet, Long. 79°-52' plus 5.4 feet, thence due east a distance of 6309.4 feet to Canal Zone boundary monument No. 5, the geodetic coordinates of which are Lat. 9°-21′ plus 2830.6 feet, Long. 79°-50′ plus 5709.0 feet; thence following the Canal Zone boundary line N 0°-33′ E to the southern shore of Largo Remo island at low water, thence following around the low water shore line of Largo Remo island in an easterly direction, thence continuing in a northerly direction along the low water shore line of Largo Remo island, Droque Island, and the two small islands to the north and adjacent to Droque island, thence continuing in a westerly direction along the low water shore line to the Canal Zone boundary line, thence continuing in the general directions west and south to include all the mainland and islands (Pena Guapa, Galeta, Palma Media, Margarita, etc.) to the point of beginning.

All bearings are true.

(All pipe monuments are painted white and stenciled in black—Mil. Res.—where the boundary lines intersect the sides of the pipe.)

#### FRANCE FIELD RESERVATION.

Beginning at a concrete monument inside a 4" c. i. pipe, 22.5 feet west of center line of track of the Fort Randolph branch, Panama Railroad, and approximately 4350 fine of track of the Fort Randolph branch, Panama Rairoad, and approximately 4350 feet north of the point where this railroad crosses the Majagual River, the geodetic coordinates of which monument are Lat. 9°-21′ plus 3547.5 feet, Long. 79°-52′ plus 5061.6 feet, (this monument being also monument "A" of the Naval Aviation and Submarine Base described below); thence due west a distance of 520.7 feet to a '2" g. i. pipe monument on the shore of Manzanillo Bay, the geodetic coordinates of monument being Lat. 9°-21′ plus 3547.5 feet, Long. 79°-52′ plus 5582.3 feet, (this monument being also monument "B" of the Naval Aviation and Submarine Base); thence following the shore line of Manzanillo Bay in a general southerly direction to the month of Majagual Biver though along the porth heavyl of said viver to a 11″ g. i. the mouth of Majagual River, thence along the north bank of said river to a 12" g. i. pipe monument, the geodetic coordinates of which are Lat. 9°-21'-00", Long. 79°-52' plus 3810.7 feet, thence due east a distance of 3805.3 feet to a concrete monument, the geodetic coordinates of which are Lat. 9°-21′-00″, Long. 79°-52′ plus 5.4 feet, thence due north a distance of 2830.6 feet to a 1½″ g. i. pipe monument the geodetic coordinates of which are Lat. 9°-21′ plus 2830.6 feet, Long. 79°-52′ plus 5.4 feet, thence N 81°-56′ W a distance of 5106.8 feet to a concrete monument inside a 4″ c. i. pipe, which is the point of beginning.

All bearings are true. All pipe monuments are painted white and stenciled in

black-Mil. Res.-where the boundary lines intersect the sides of the pipe.

#### COCO SOLO RESERVATION.

Beginning at a 2" g. i. pipe monument (marked "C" on the map) on the shore of Manzanillo Bay, on the west side of the Fort Randolph branch, Panama Railroad, Manzanillo Bay, on the west side of the Fort Randolph branch, Panama Raliroad, and 22.5 feet from center line of track, the geodetic coordinates of which monument are Lat. 9°–22′ plus 4674.1 feet, Long. 79°–52′ plus 5764.7 feet, thence S 12°–15′ E paralleling the railroad, a distance of 874.6 feet to a 2″ g. i. pipe monument, the geodetic coordinates of which are Lat. 9°–22′ plus 3819.4 feet, Long. 79°–52′ plus 579.1 feet, thence S 77°–45′ W a distance of 335.6 feet to a concrete monument, the geodetic coordinates of which are Lat. 9°–22′ plus 3748.2 feet, Long. 79°–52′ plus 5907.0 feet, thence S 12°–45′ E a distance of 79.8 feet to a concrete monument the geodetic coordinates of which are Lat. 9°–22′ plus 3670.4 feet, Long. 79°–52′ plus 5889.4 feet, thence N. 81°–37′ E a distance of 336.0 feet to a 2″ g. i. pipe monument the geodetic coordinates of which are Lat. 9°–22′ plus 3719.4 feet, Long. 79°–52′ plus the geodetic coordinates of which are Lat. 9°-22' plus 3719.4 feet, Long. 79°-52' plus the geodetic coordinates of which are Lat. 9-22 plus 3719.4 feet, Long. 79-32 plus 5557.4 feet, thence again along a line parallel to and 22.5 feet west of center line of track to a concrete monument inside of a 4' c. i. pipe, the geodetic coordinates of which are 9°-21' plus 3547.5 feet, Long. 79°-52' plus 5061.6 feet, (this monument marked "A" on the map), thence due west a distance of 520.7 feet to a 2" g. i. pipe monument on the shore of Manzanillo Bay, the geodetic coordinates of which monument are Lat. 9°-21' plus 3547.5 feet, Long. 79°-52' plus 5582.3 feet, (this monument marked "B" or the real state of the state o marked 'B" on the map).

The part of the boundary thus far described is common with the boundary of the Fort Randolph Military Reservation, on the east, and France Field on the south.

Thence following the shore line of Manzanillo Bay in a northerly and easterly direction to the point of beginning.

All bearings true. All pipe monuments are painted white and stenciled in black—Mil. Res.—where the boundary lines intersect the sides of the pipe.

In addition to the above, the Secretary of War shall have control of all lands and water for a distance of one hundred yards out to sea from the high water line on all shores of Fort Randolph and France Field Reservations, and the Secretary of the Navy shall have control of all lands and water for a distance of one hundred yards out to sea from the high water line on all shores of Coco Solo Reservation.

The transfer of the Fort Randolph and France Field Reservations is made subject to the continued right of the Supply Department of the Panama Canal to use areas not contiguous to barracks or quarters for pasturage of cattle for the supply of beef to the Canal Zone; the pasturage areas, however, to be available for use by the troops when required for military maneuvers or for target practice.

WOODROW WILSON.

THE WHITE HOUSE, 9 April, 1920.

[No. 3257.]

## EXECUTIVE ORDER.

By direction of the President it is ordered that Senor Don Manuel Walls y Merino shall be allowed a lump sum of Seven Hundred Fifty Dollars (\$750) to cover his salary and traveling expenses after completion on the Isthmus of his services as Umpire of the Joint Land Commission in lieu of the compensation and return traveling allowances authorized in the Executive order dated March 20, 1917.

NEWTON D. BAKER. Secretary of War.

WASHINGTON, D. C., May 1, 1920.

### PROCLAMATION.

### OPENING OF THE PANAMA CANAL.

WHEREAS, Section 4 of the Act of Congress entitled "An Act To Provide for the opening, maintenance, protection and operation of the Panama Canal, and the sanitation and government of the Canal Zone," approved August 24, 1912, (37 Stat. L. 561) and known as the Panama Canal Act, provides that upon the completion of the Panama Canal the President shall cause it to be officially and formally opened for use and operation; and

WHEREAS, the Canal is completed, and is open for commerce;

Now, Therefore, I, Woodrow Wilson, President of the United States of America, acting under the authority of the Panama Canal Act, do hereby declare and proclaim the official and formal opening of the Fanama Canal for use and operation in conformity with the laws of the United States.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the seal of the

United States to be affixed.

Done in the District of Columbia, this 12th day of July, in the year of our Lord One Thousand Nine Hundred and Twenty, and of the Independence of the United States of America, the One Hundred and Forty-fifth. SEAL WOODROW WILSON.

By the President: NORMAN H. DAVIS, Acting Secretary of State.

[No. 1570.]

### EXECUTIVE ORDER.

#### PAITILLA POINT MILITARY RESERVATION.

The area hereinafter described as Paitilla Point Military Reservation, formerly situated within the Republic of Panama, but acquired by the United States Government and now a part of the Canal Zone, is hereby set apart as a military reservation under the control of the Secretary of War, the said reservation, however, to remain subject to the civil jurisdiction of the Canal Zone authorities in conformity with the Panama Canal Act.

The said area is described as follows:

### PAITILLA POINT MILITARY RESERVATION.

Starting at a triangulation station marked "Paitilla 1914" on the map (Panama Canal Drawing No. X-6053-1) the geodetic coordinates of which are Lat. 8° 58′ plus 3,045.82 feet and Long. 79° 30′ plus 5,847.92 feet, go on an azimuth of 180° 00′ for a distance of 1,399.24 feet to a concrete monument, marked "A" on the map, which is the point of beginning on the boundary of the reservation; thence on a line the azimuth of which is 270° 00′ for a distance of 1,146.95 feet to a concrete monument marked "B" on the map, which mean marked "B" on the map, which mean marked the external high water line on the marked "B" on the map, which monument is on the extreme high-water line on the shore of the Bay of Panama; thence along the extreme high-water line, in a general shore of the Bay of Panama; thence along the extreme nigh-water line, in a general southwesterly direction, for a distance of 6,000 feet more or less to a concrete monument marked "C" on the map, which monument is on the extreme high-water line; thence on a line the azimuth of which is 123° 43′ for a distance of 67.3 feet to a concrete monument marked "D" on the map, which monument is on the extreme high water line. The last-mentioned course between "C" and "D" cuts off the extreme end of Paitilla Point and coincides with the old Panama City boundary. From "D" follow the extreme high-water line in a northerly direction along the east bank of the extreme high watershills for a distance of 4 000 feet more or less to a conof the estuary of the Rio Matasnillo for a distance of 4,000 feet more or less to a concrete monument marked "E" on the map; thence on a line the azimuth of which is 270° 00' for a distance of 1,088.76 feet to a concrete monument marked "A" on the map, which is the point of beginning.
All bearings are true.

In addition to the above, the Secretary of War shall have control of all land on the eastern side of above described area between extreme high-water line and low-water line within the confines of the prolongation of boundary lines E-B and D-C; also all land on the western side of above described area between extreme high water line and low-water line, but in no case further than the center line of the Rio Matasnillo, between the confines of the prolongation of boundary lines B-E and C-D.

WOODROW WILSON.

THE WHITE HOUSE, 1 September, 1920.

[No. 3322.]

### EXECUTIVE ORDER.

Whereas, Under the provisions of Section 17 of the Act approved June 5, 1920, entitled "An Act To Provide for the promotion and maintenance of the American merchant marine, etc.," the Shipping Board "is authorized and directed to take over on January 1, 1921, the possession and control of, and to maintain and develop, all docks, piers, warehouses, wharves and terminal equipment and facilties, including all leasehold easements, rights of way, riparian rights and other rights, estates and interests therein or appurtenant thereto, acquired by the President by or under the Act entitled 'An Act making appropriations to supply urgent deficiencies in appropriations for the fiscal year ending June 30, 1918, etc.' "; and

WHEREAS, By a further provision of said Section 17, "the President may at any time he doesn't processary, by order setting out the need therefor and fixing the

time he deems it necessary, by order setting out the need therefor and fixing the period of such need, permit or transfer the possession and control of any part of the property taken over by or transferred to the Shipping Board under this section to the War Department or the Navy Department for their needs"; and WHEREAS, The piers known as the Hoboken piers, formerly the property of the North German Lloyd and Hamburg American Steamship Companies and of the

Hoboken Shore Railroad, were acquired by the President under the Act referred to in paragraph 1 of Section 17 of the Act of June 5, 1920, hereinbefore recited, and are

therefore subject to the provisions of said Section 17; and

Whereas, The War Department has heretofore leased pier No. 1, with bulkhead and yard space opposite, of said property to the Panama Railroad Steamship Line for a period of five years, which said Panama Railroad Steamship Line is the property of the Government of the United States, performing an indispensable service in continuous continuous property. nection with the maintenance and operation of the Panama Canal, and incidentally furthering the commercial service between the United States and certain Caribbean, Central and South American ports, and is using said pier intensively and efficiently;

Whereas, Piers 4, 5, 6, and 11, being parts of said property, are necessary to be retained in the possession and control of the War Department for use in connection with the overseas transport service now carrying men and supplies to and from Antwerp for the American Army of Occupation at Coblenz; now

Therefore, I do hereby determine that it is necessary that the War Department

retain of such property piers 1, 4, 5, 6, and 11, together with the bulkhead opposite the slip between piers 3 and 4, and opposite piers 1, 4, 5, and 6; also the second floor of the bulkhead opposite the slip between piers 3 and 4 and opposite pier 4; also the offices on the third floor of the bulkhead opposite piers 1, 2, and 3; and the yard space opposite piers 1, 4, 5, and 6; and do order and direct that the said War Department do retain all of such property so described, and fix the period of retention as to pier 1, with bulkhead and yard space opposite, as the period of the existing lease of five years made between the War Department and the Panama Railroad Steamship Line, and as the period of retention of the other property herein directed and ordered to be retained a period of two years, unless in the opinion of the President the need of the War Department therefor, or for any part thereof, shall in the meantime cease, in which case, by an order subsequent hereto, the President declaring the cessation of such need shall cause possession and control of such property or part thereof to revert to the Shipping Board.

WOODROW WILSON.

THE WHITE HOUSE, 2 October, 1920.

[No. 3332.]



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